

# Service Manual

**PIONEER®**  
The Art of Entertainment

DEH-636/ES



ORDER NO.  
**CRT2022**

HIGH POWER CD PLAYER WITH FM/AM TUNER

# DEH-636 ES

## DEH-536 ES

**COMPACT**  
**disc**  
**DIGITAL AUDIO**

- See the separate manual CX-597(CRT1829) for the CD mechanism description, disassembly and circuit description.
- The CD mechanism employed in this model is one of CX-597 series.

### ● CD Player Service Precautions

1. For pickup unit(CXX1230) handling, please refer to "Disassembly"(CX-597 Service Manual CRT1829).  
During replacement, handling precautions shall be taken to prevent an electrostatic discharge(protection by a short pin).
2. During disassembly, be sure to turn the power off since an internal IC might be destroyed when a connector is plugged or unplugged.
3. Please checking the grating after changing the service pickup unit(see page 51).
4. This device employs an inverter as the power supply for the EL. Utmost care should be used not to suffer from a possible electric shock, accordingly.

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1. SAFETY INFORMATION

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual. Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

2. EXPLODED VIEWS AND PARTS LIST

2.1 PACKING

● DEH-636/ES

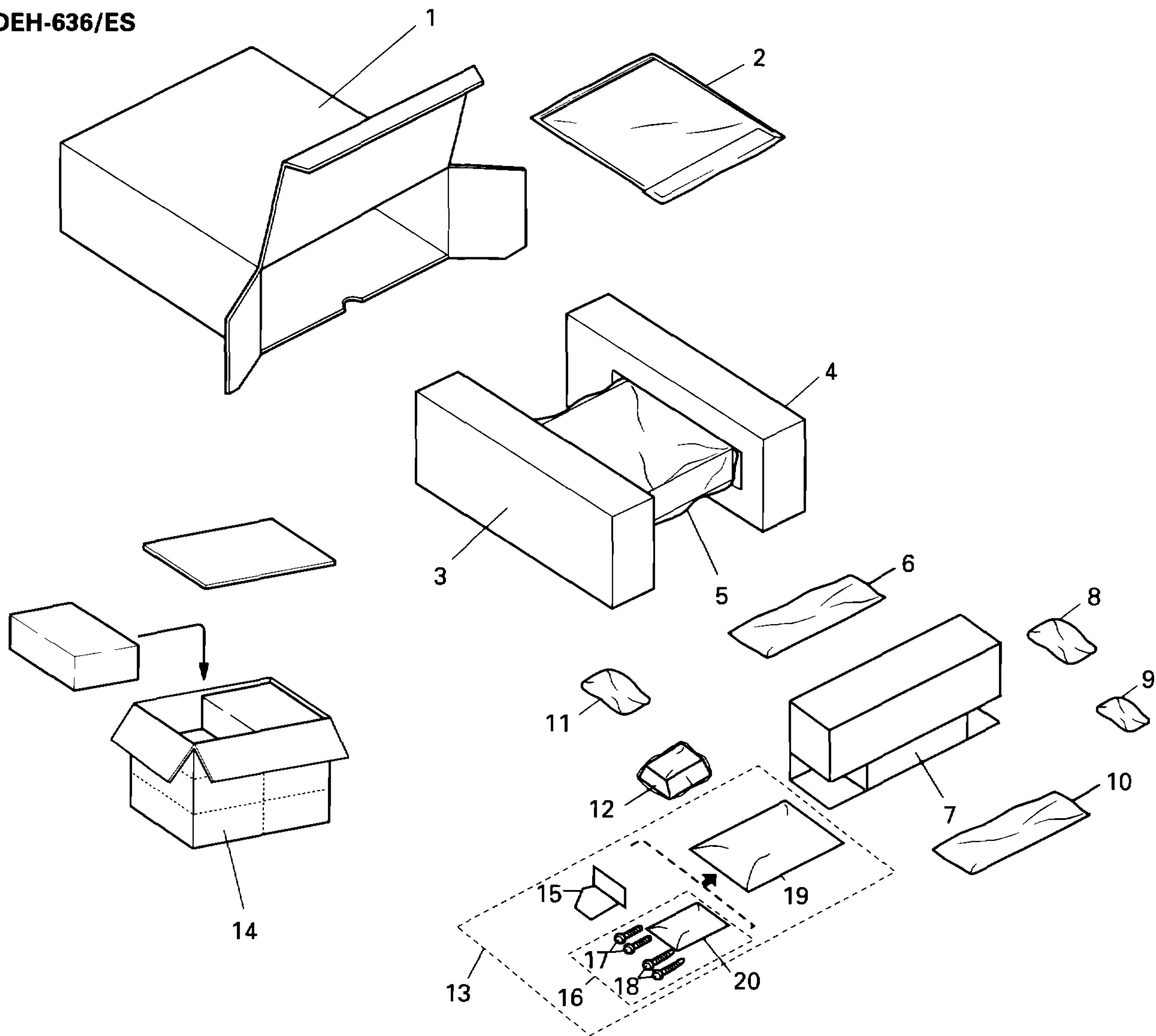


Fig. 1



NOTE:

- Parts marked by " \* " are generally unavailable because they are not in our Master Spare Parts List.
- Screws adjacent to ▼ mark on the product are used for disassembly.

● Parts List

Mark No.	Description	Part No.	Mark No.	Description	Part No.
1	Carton	CHG3240	8	Remote Control Assy	CXB1063
2-1	Owner's Manual	CRD2272	9	Battery	CEX1006
2-2	Installation Manual	CRD2273	10	Case Assy	CXB1063
2-3	Owner's Manual	CRD2276	11	Accessory Assy	CEA2002
2-4	Polyethylene Bag	CEG1116	12	Base Assy	CEA2344
3	Protector	CHP1766	12-1	Polyethylene Bag	CZE3188
4	Protector	CHP1767	* 13	Bracket Assy	CEA2346
5	Polyethylene Bag	CEG-162	14	Contain Box	CHL3240
6	Cord Assy	CDE5186	15	Bracket	CZN6467
7	Inner Box	CHW1628	16	Screw Assy	CZE3198
			17	Screw	BPZ30P100FZK
			18	Screw	BNC40P120FZK
			* 19	Polyethylene Bag	CZE3201
			* 20	Polyethylene Bag	CEG-127

● DEH-536/ES

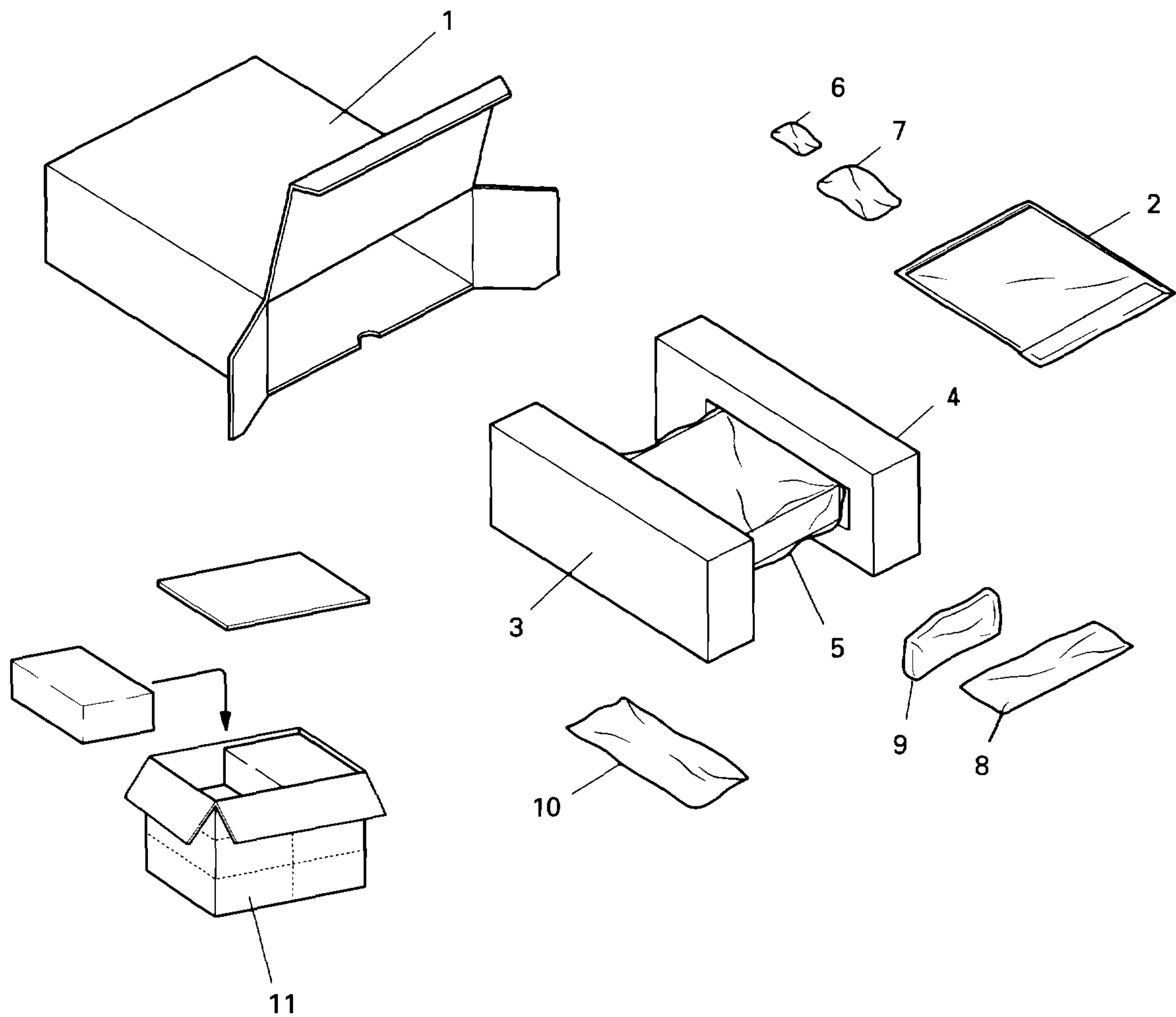


Fig. 2

● Parts List

Mark No.	Description	Part No.	Mark No.	Description	Part No.
1	Carton	CHG3246	9	Case Assy	CXB1063
2-1	Owner's Manual	CRD2274	10	Accessory Assy	CEA2002
2-2	Installation Manual	CRD2275	11	Contain Box	CHL3246
2-3	Polyethylene Bag	CEG1116			
3	Protector	CHP1766			
4	Protector	CHP1767			
5	Polyethylene Bag	CEG-162			
6	Battery	CEX1030			
7	Remote Control Unit	CXB1225			
8	Cord Assy	CDE5324			



● Owner's Manual, Installation Manual

Model	Part No.	Language
DEH-636/ES	CRD2272	English, Spanish
	CRD2276	Portuguese, Arabic
	CRD2273	English, Spanish, Portuguese, Arabic
DEH-536/ES	CRD2274	English, Spanish Portuguese, Arabic
	CRD2275	English, Spanish, Portuguese, Arabic

● Accessory Assy

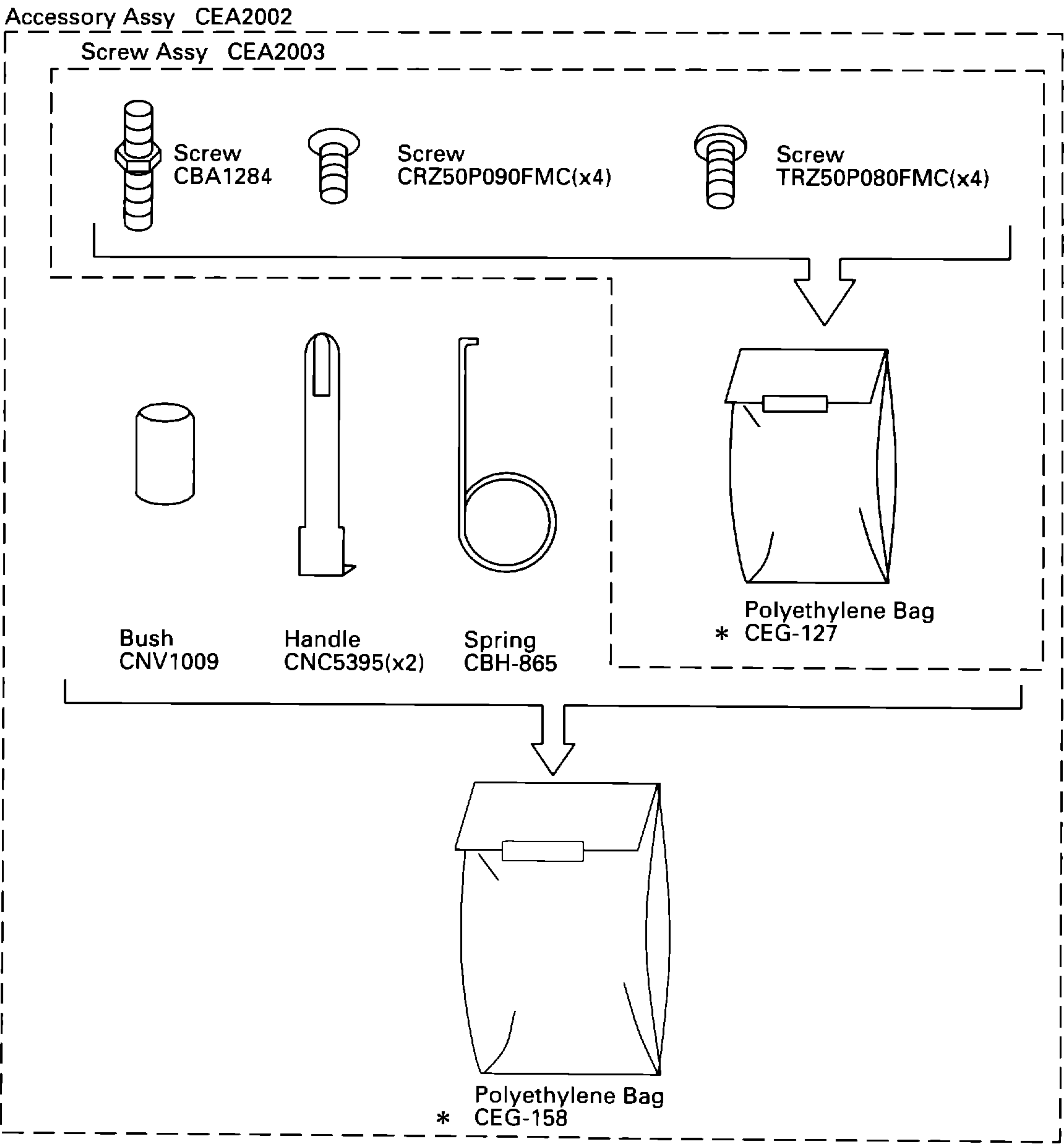


Fig. 3



2.2 EXTERIOR

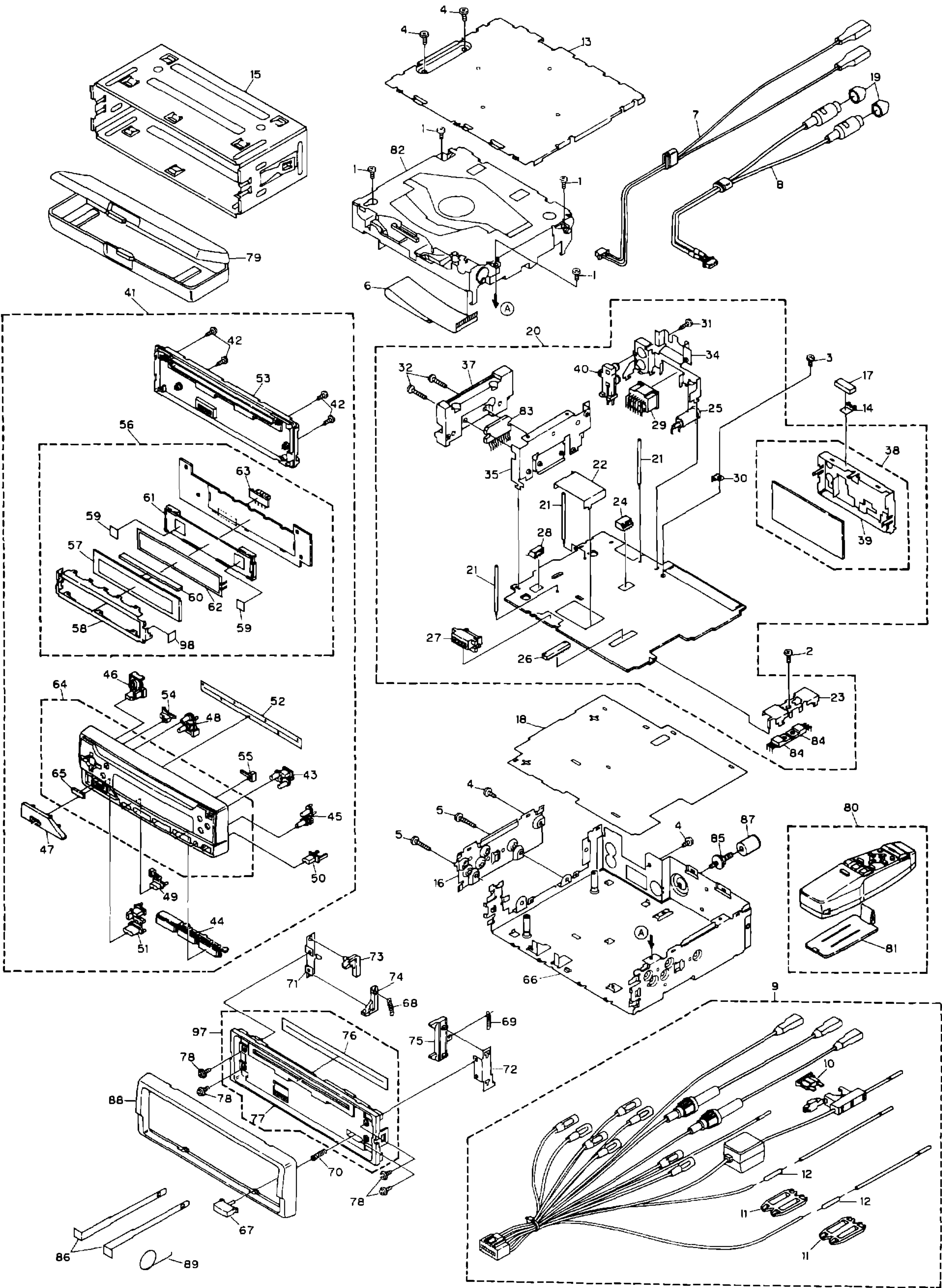


Fig. 4



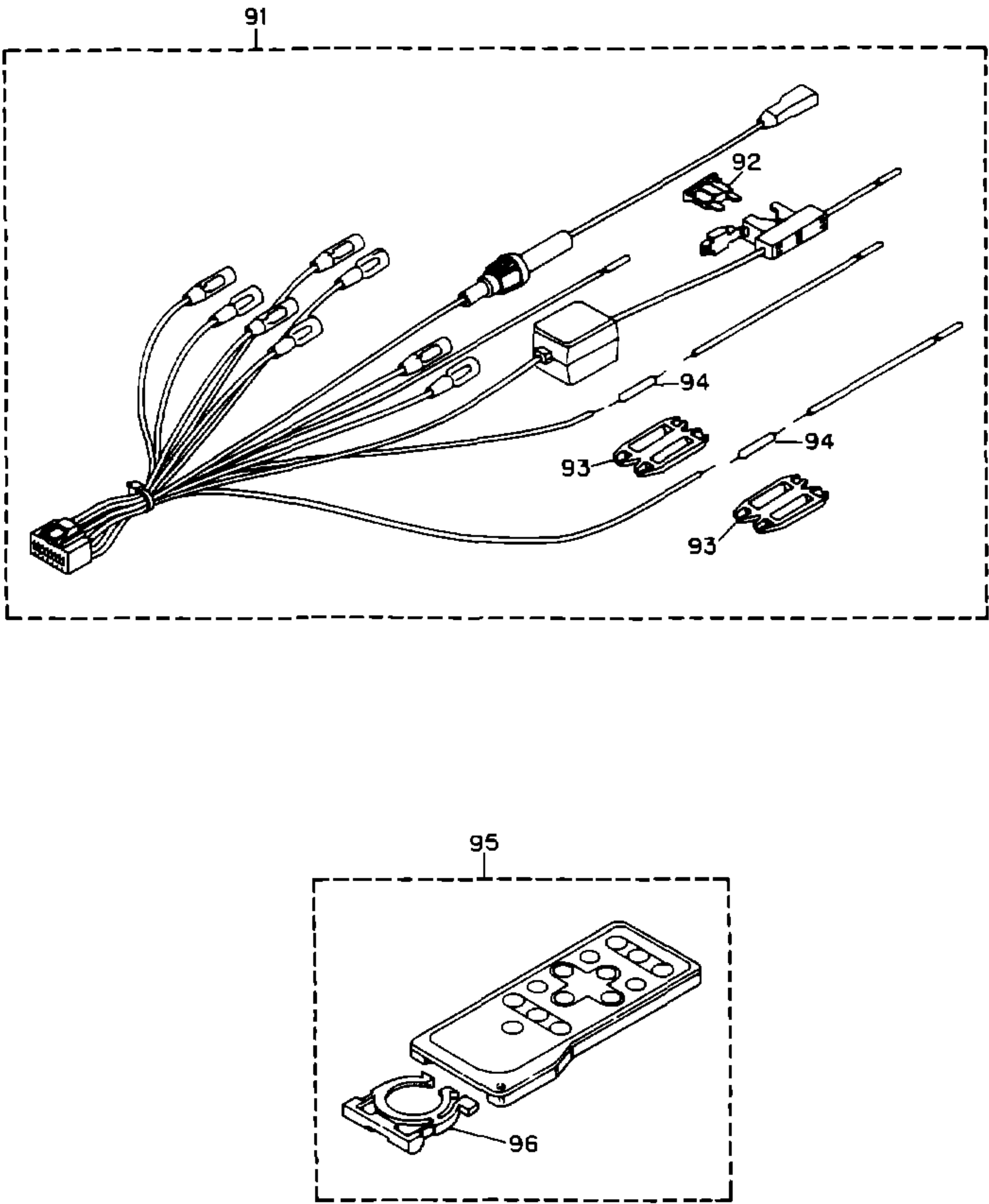


Fig. 5

(1)PARTS LIST

Mark No.	Description	Part No.	Mark No.	Description	Part No.
1	Screw	BSZ26P050FMC	51	Button(SOURCE)	CAC5021
2	Screw	ASZ26P080FMC	52	Cover	CNM4704
3	Screw	BSZ30P055FUC	53	Cover	CNS4208
4	Screw	BSZ30P060FMC	54	Lighting Conductor	CNV4799
5	Screw	BSZ30P180FMC	55	Lighting Conductor	CNV4800
6	Cable	CDE4869	56	Keyboard Unit	See Contrast table(2)
7	Cord Assy	See Contrast table(2)	57	LCD	CAW1393
8	Cord Assy	See Contrast table(2)	58	Holder	CNC6864
9	Cord Assy	See Contrast table(2)	59	Film	CNM4349
10	Fuse	See Contrast table(2)	60	Connector	CNV4770
11	Cap	See Contrast table(2)	61	Housing	CNV4797
12	Resistor	See Contrast table(2)	62	EL(IL1801)	CEL1489
13	Case	CNB2119	63	Connector(CN1801)	CKS3580
14	Holder	CNC6469	64	Grille Unit	See Contrast table(2)
15	Holder	CNC6798	65	Cushion	CNM5156
16	Holder	CNC6862	66	Chassis Unit	See Contrast table(2)
17	Cushion	CNM4870	67	Button	CAC5180
18	Insulator	CNM5053	68	Spring	CBH1834
19	Cap	See Contrast table(2)	69	Spring	CBH1835
20	Tuner Amp Unit	See Contrast table(2)	70	Spring	CBH1996
21	Clamper	See Contrast table(2)	71	Bracket	CNC6135
22	Holder	CNC5968	72	Bracket	CNC6791
23	Holder	CNC6132	73	Arm	CNV4692
24	Connector(CN254)	See Contrast table(2)	74	Arm	CNV4693
25	Antenna Jack(CN502)	CKX1056	75	Arm	CNV4951
26	Connector(CN651)	CKS2228	76	Cover	CNM4875
27	Connector(CN801)	CKS3581	77	Panel	See Contrast table(2)
28	Connector(CN851)	See Contrast table(2)	78	Screw	IMS20P030FZK
29	Plug(CN901)	CKM1187	79	Case Assy	CXB1063
30	Wrapping Terminal(CN501)	CKF1059	80	Remote Control Assy	See Contrast table(2)
31	Screw	BPZ26P080FMC	81	Battery Cover	See Contrast table(2)
32	Screw	BSZ26P140FMC	82	CD Mechanism Module	CXK5001
33	.....		83	IC(IC201)	TDA7386
34	Holder	See Contrast table(2)	84	Transistor(Q951, 971)	2SD2396
35	Holder	CNC7006	85	Screw	CBA1284
36	.....		86	Handle	CNC5395
37	Heat Sink	CNR1434	87	Bush	CNV1009
38	FM/AM Tuner Unit	CWE1485	88	Panel	CNS4200
39	Holder	CNC6555	89	Spring	CBH-865
40	Pin Jack(CN253)	CKB1028	90	.....	
41	Detach Grille Assy	See Contrast table(2)	91	Cord Assy	See Contrast table(2)
42	Screw	BPZ20P100FZK	92	Fuse	See Contrast table(2)
43	Button(EJECT)	CAC4875	93	Cap	See Contrast table(2)
44	Button(1-6)	CAC4876	94	Resistor	See Contrast table(2)
45	Button(PGM)	CAC5079	95	Remote Control Unit	See Contrast table(2)
46	Button(∧, <)	CAC4878	96	Cover	See Contrast table(2)
47	Button(VOLUME)	CAC4879	97	Panel Unit	See Contrast table(2)
48	Button(A, F)	CAC4880	* 98	Spacer	CNM5379
49	Button(BAND)	CAC4881			
50	Button(DETACH)	CAC4883			



(2) CONTRAST TABLE

DEH-636/ES and DEH-536/ES have the same construction except for the following:

Mark No.	Symbol & Description	Part No.	
		DEH-636/ES	DEH-536/ES
7	Cord Assy	CDE5185	Not used
8	Cord Assy	CDE5209	Not used
9	Cord Assy	CDE5186	Not used
10	Fuse(10A)	CEK1136	Not used
11	Cap	CNS1472	Not used
12	Resistor	RS1/2P102JL	Not used
19	Cap	CNV2680	Not used
20	Tuner Amp Unit	CWM5005	CWM5010
21	Clamper	CEF1009	Not used
24	Connector(CN254)	CKS3598	Not used
28	Connector(CN851)	CKS3597	Not used
34	Holder	CNC6884	CNC6888
41	Detach Grille Assy	CXA9615	CXA9620
56	Keyboard Unit	CWM5015	CWM5020
64	Grille Unit	CXA9761	CXA9763
66	Chassis Unit	CXA9660	CXA9662
77	Panel	CNS4450	CNS4209
80	Remote Control Assy	CXB1160	Not used
81	Battery Cover	CNS4406	Not used
91	Cord Assy	Not used	CDE5324
92	Fuse(10A)	Not used	CEK1136
93	Cap	Not used	CNS1472
94	Resistor	Not used	RS1/2P102JL
95	Remote Control Unit	Not used	CXB1225
96	Cover	Not used	CNS4139
97	Panel Unit	Not used	CXB1401

2.3 CD MECHANISM MODULE

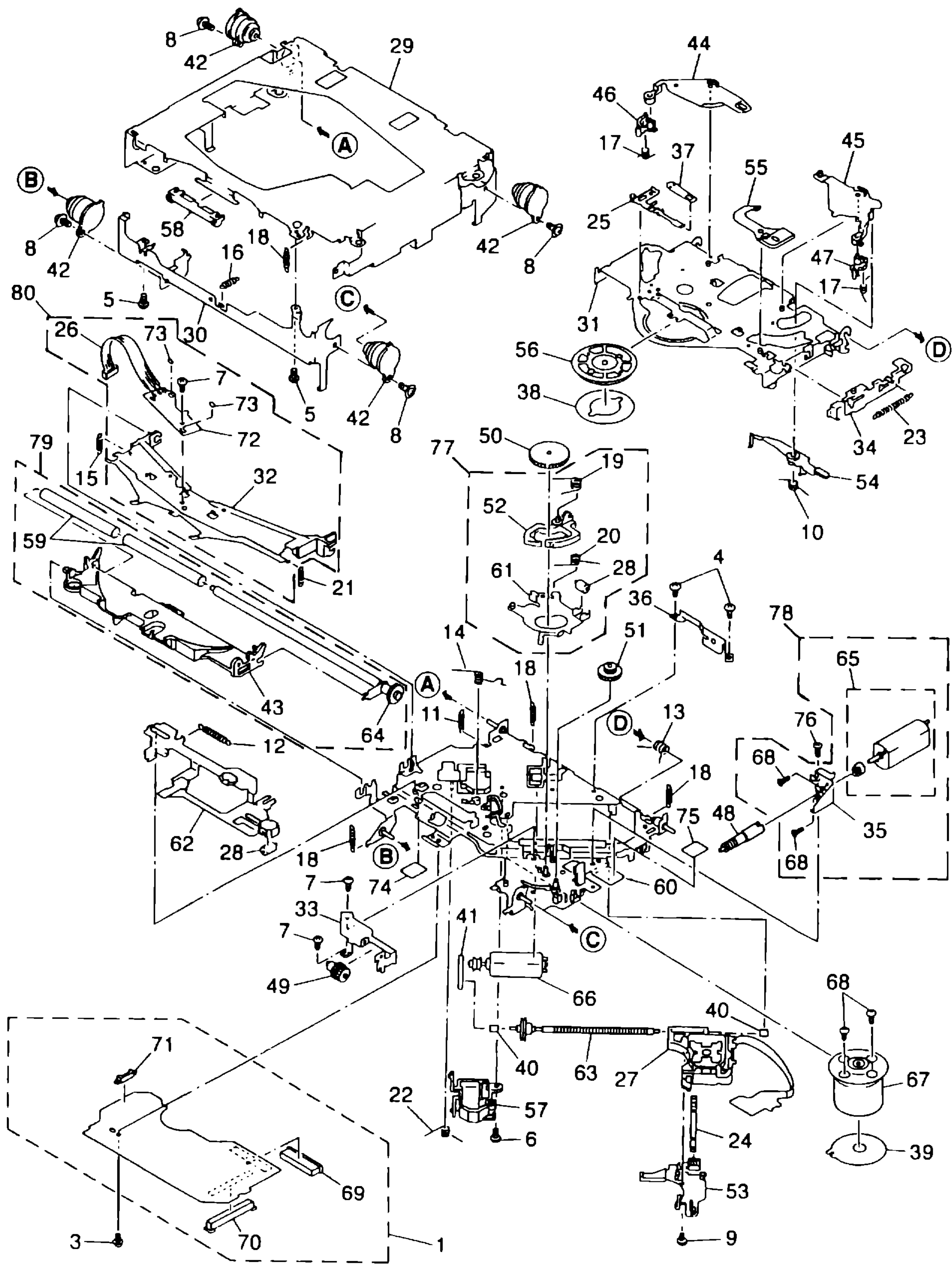


Fig. 6



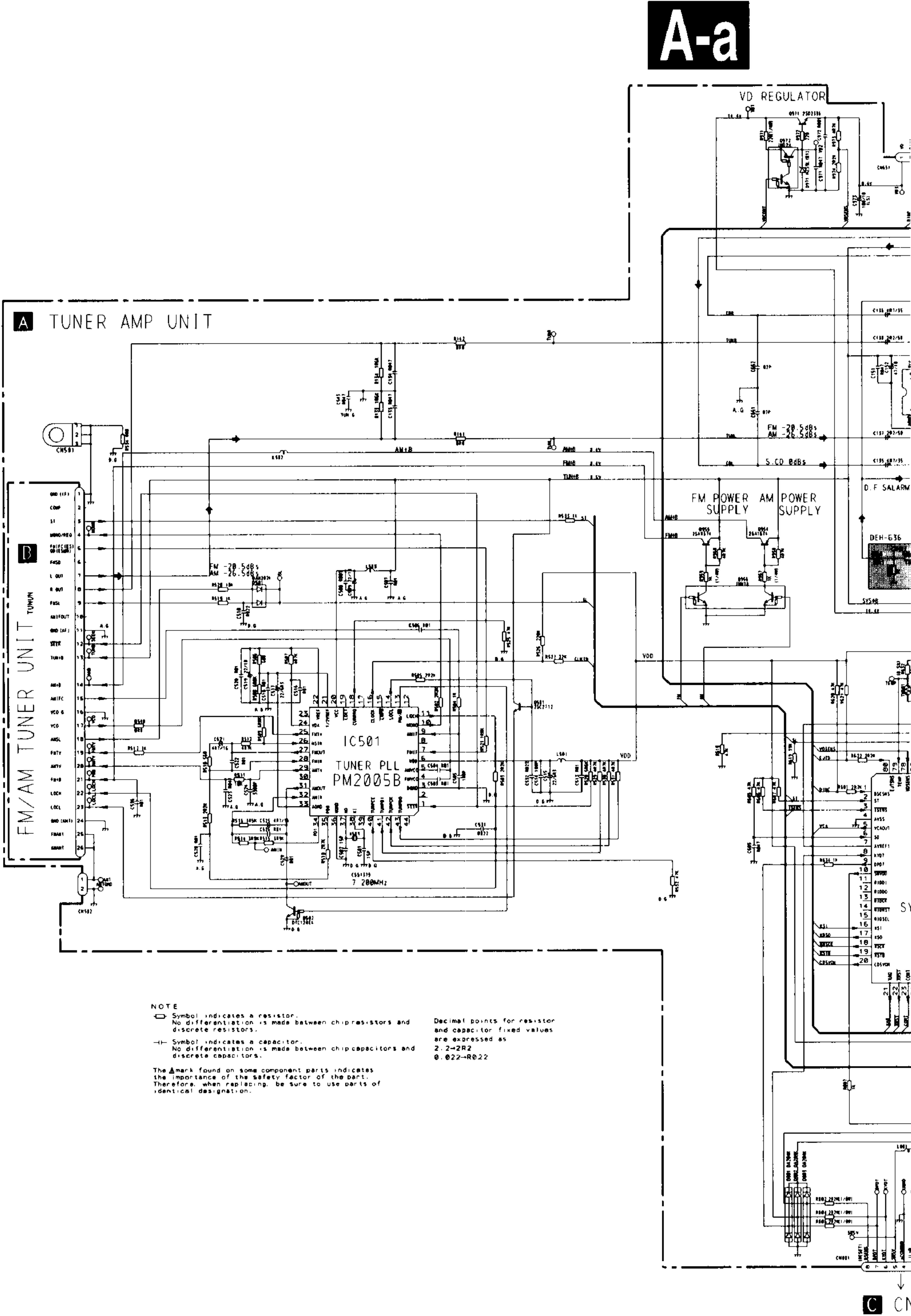
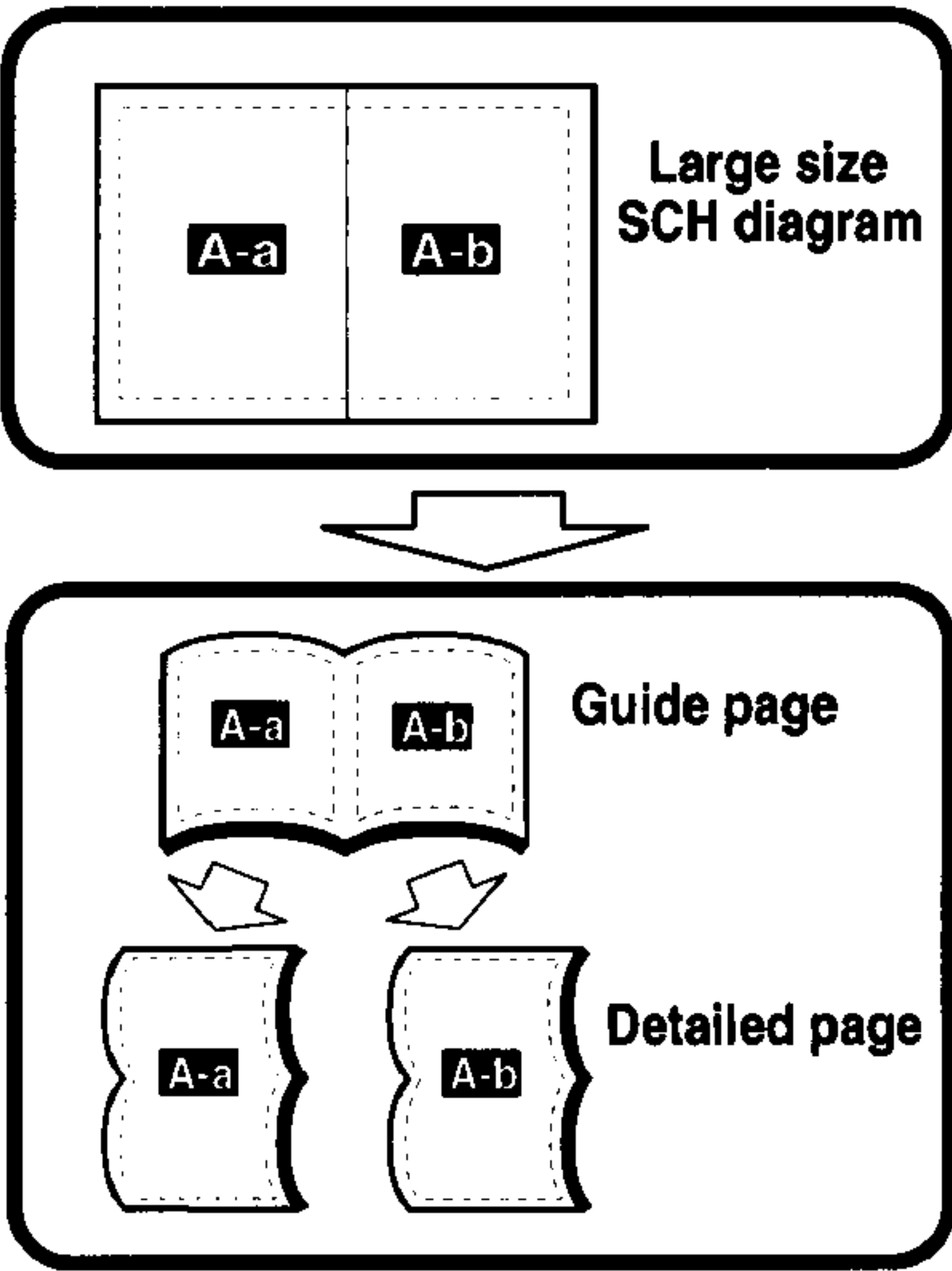
● Parts List

Mark No.	Description	Part No.	Mark No.	Description	Part No.
1	Control Unit	CWX1889	46	Arm	CNV4124
2	.....		47	Arm	CNV4125
3	Screw	IMS26P035FMC	48	Gear	CNV4128
4	Screw	BMZ20P040FMC	49	Gear	CNV4129
5	Screw	BSZ20P040FMC	50	Gear	CNV4130
6	Screw(M2×3)	CBA1077	51	Gear	CNV4131
7	Screw(M2×2)	CBA1250	52	Arm	CNV4136
8	Screw(M2×5)	CBA1296	53	Holder	CNV4663
9	Screw(M2×3.85)	CBA1362	54	Arm	CNV4138
10	Spring	CBH1945	55	Arm	CNV4139
11	Spring	CBH1724	56	Clamper	CNV4140
12	Spring	CBH1939	57	Holder	CNV4664
13	Spring	CBH1729	58	Guide	CNV4484
14	Spring	CBH1730	59	Roller	CNV4509
15	Spring	CBH1731	60	Chassis Unit	CXA9515
16	Spring	CBH1732	61	Arm Unit	CXA8565
17	Spring	CBH1736	62	Lever Unit	CXA9300
18	Spring	CBH1745	63	Screw Unit	CXA8699
19	Spring	CBH1832	64	Gear Unit	CXA8701
20	Spring	CBH1833	65	Load Motor Unit(M3)	CXA8702
21	Spring	CBH1848	66	CRG Motor Unit(M2)	CXA8986
22	Spring	CBH1849	67	Motor Unit(M1)	CXA8912
23	Spring	CBH1863	68	Screw	JFZ20P025FMC
24	Spring	CBL1214	69	Connector(CN101)	CKS1953
25	Spring	CBL1269	70	Connector(CN701)	CKS2774
26	Connector(CN1)	CDE4576	71	Connector(CN801)	CKS2196
27	Pickup Unit(Service)	CXX1230	* 72	Gathering PCB	CNX2445
28	Roller	CLA2627	73	Photo-transistor(Q1, 2)	CPT-230S-X
29	Frame	CNC5796	74	Sheet	CNM4873
30	Frame	CNC5797	75	Cushion	CNM3917
31	Arm	CNC5799	76	Screw	BMZ20P025FMC
32	Arm	CNC5801	77	ELBO Arm Assy	CXA8889
33	Bracket	CNC5871	78	Load Motor Assy	CXA8891
34	Lever	CNC6054	79	LO Arm Assy	CXA8892
35	Bracket	CNC6056	80	Guide Arm Assy	CXA8893
* 36	Bracket	CNC6376			
37	Spacer	CNM3315			
38	Sheet	CNM4849			
39	PCB	CNP4230			
40	Bearing	CNR1415			
41	Belt	CNT1071			
42	Damper	CNV3974			
43	Arm	CNV4120			
44	Arm	CNV4122			
45	Arm	CNV4123			

3. SCHEMATIC DIAGRAM

3.1 OVERALL CONNECTION DIAGRAM(GUIDE PAGE)

Note: When ordering service parts, be sure to refer to “EXPLODED VIEWS AND PARTS LIST” or “ELECTRICAL PARTS LIST”.





A-b

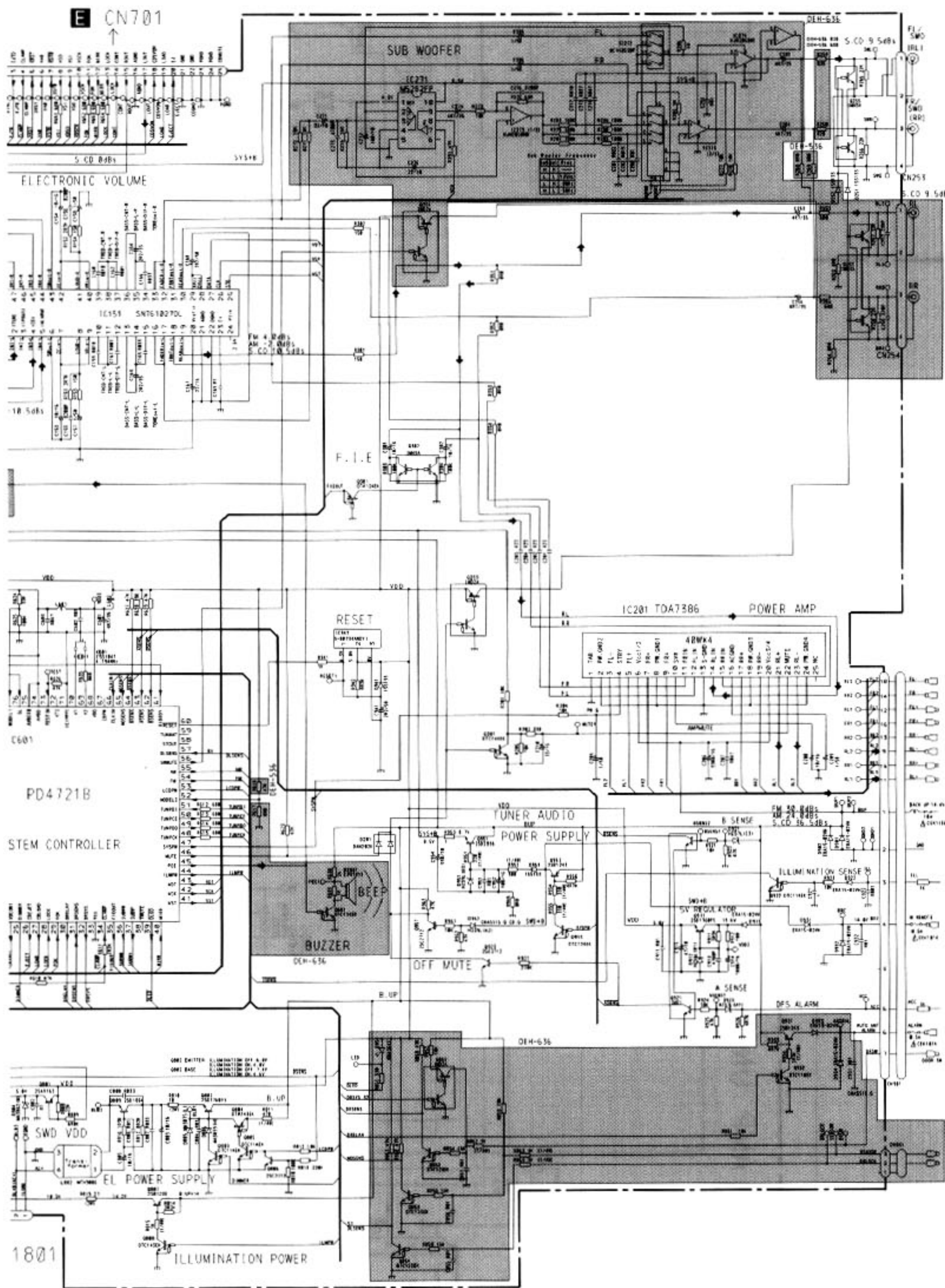


Fig. 7





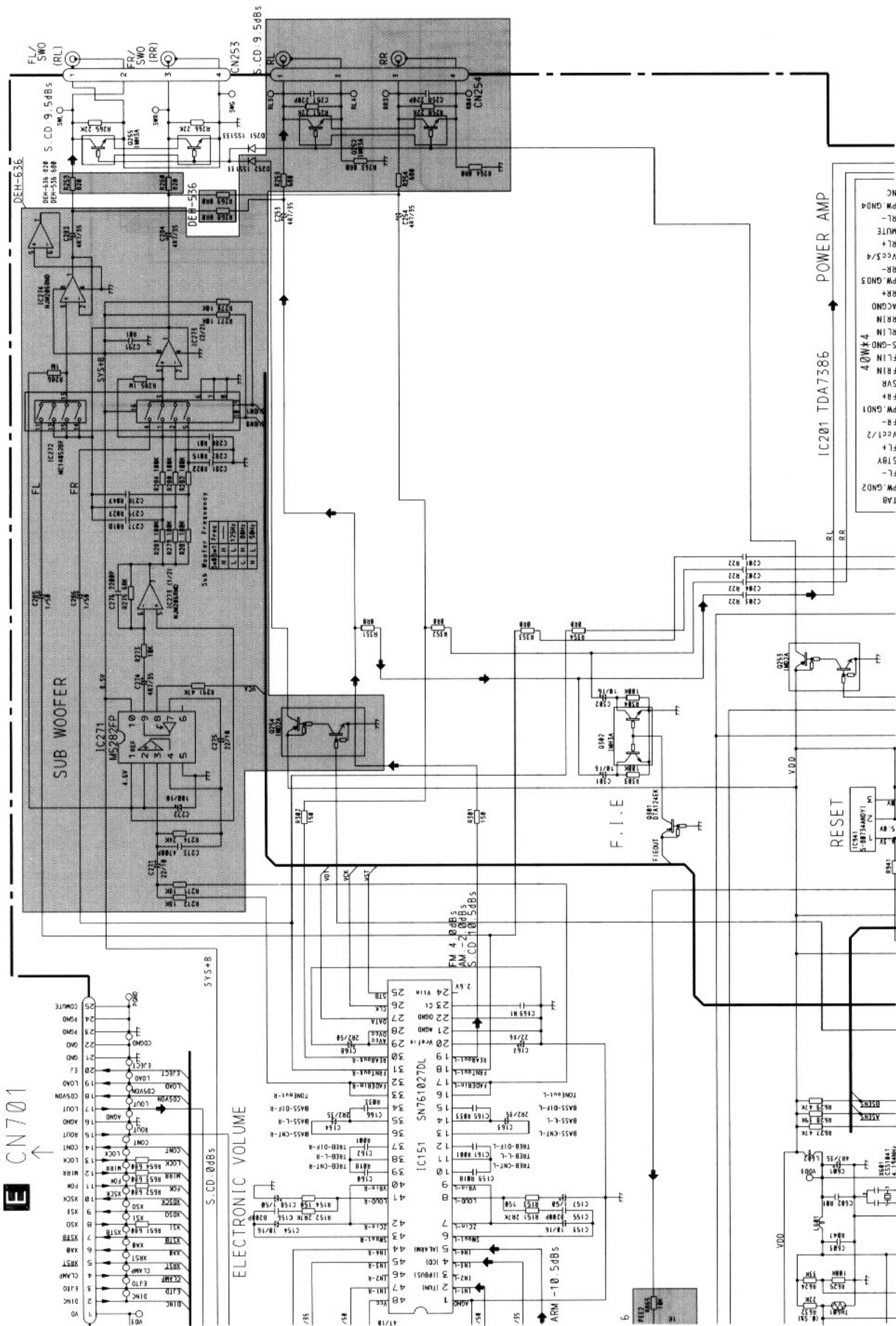




**A-a**



A-a A-b





A-a A-b

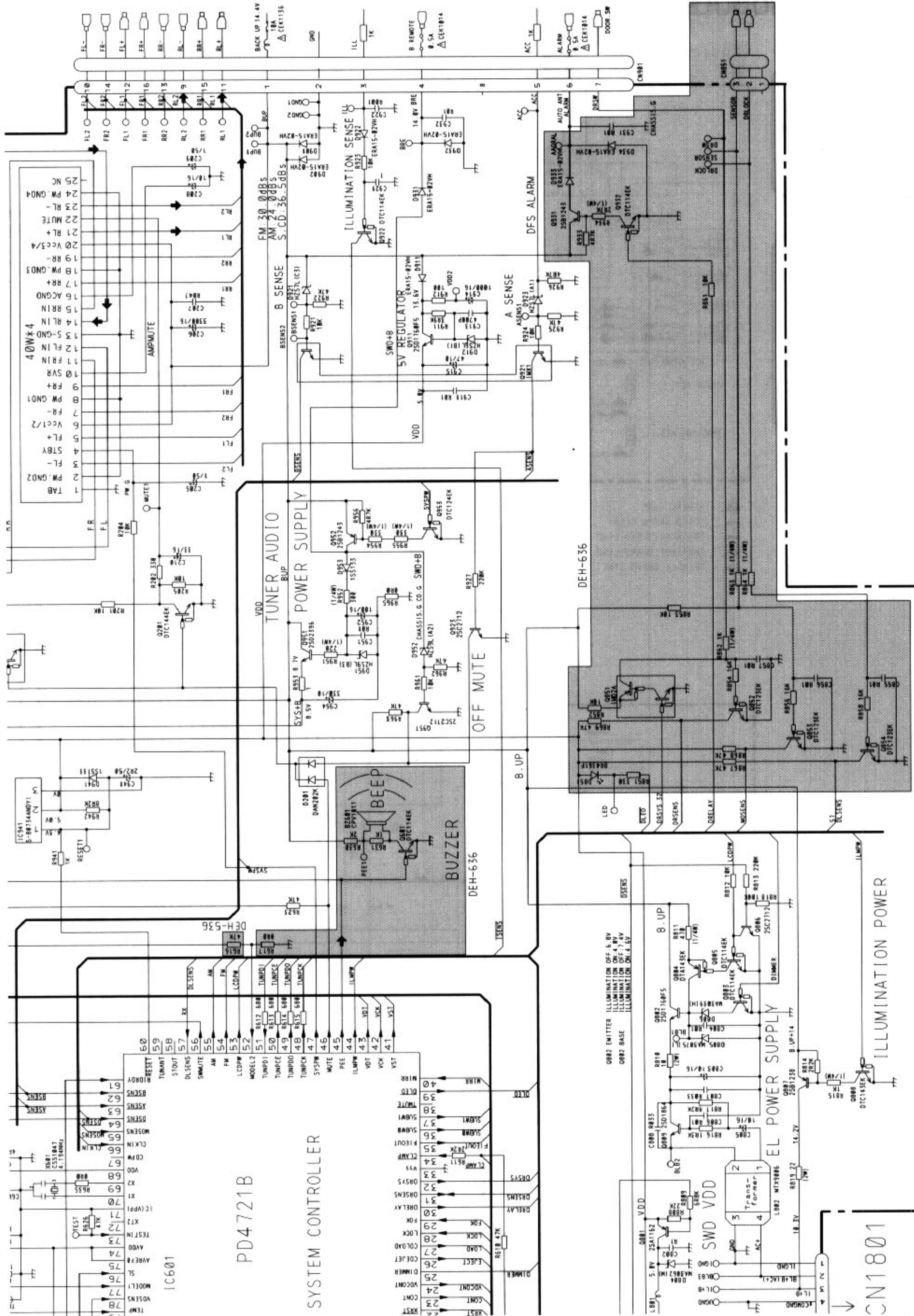


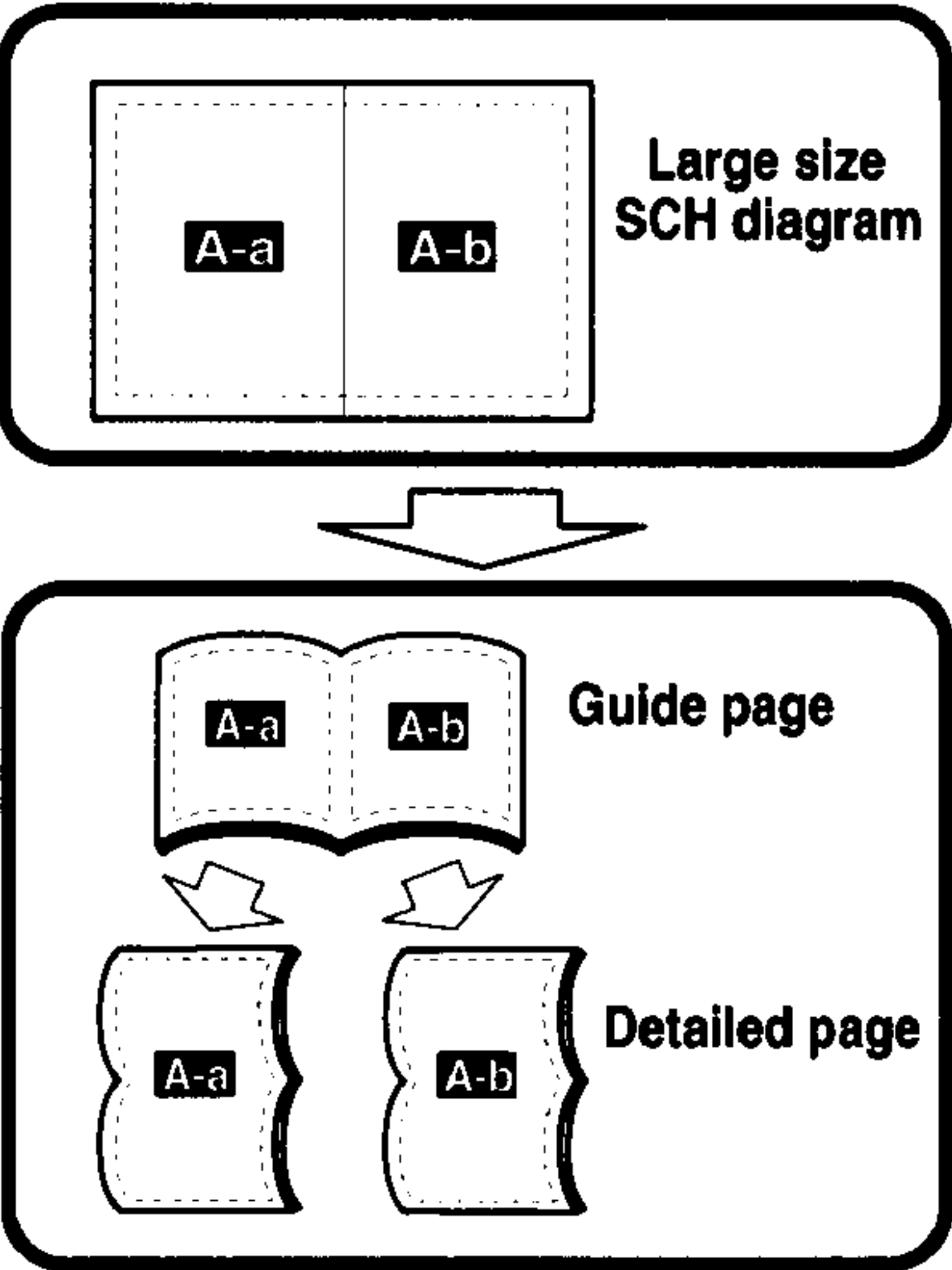
Fig. 9

A-b



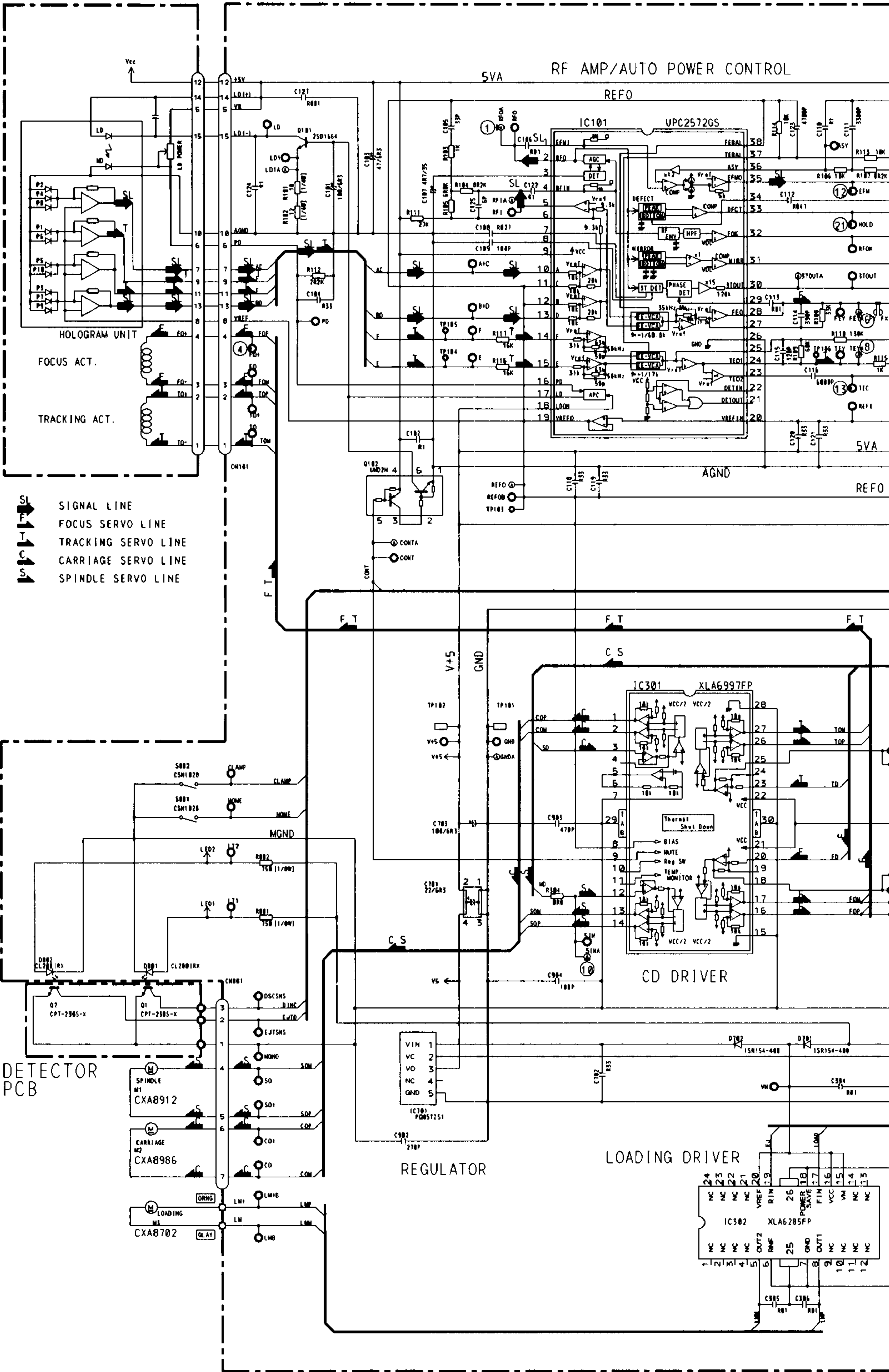
3.2 CD MECHANISM MODULE(GUIDE PAGE)

E-a



SERVICE PICKUP UNIT (CXX1230)

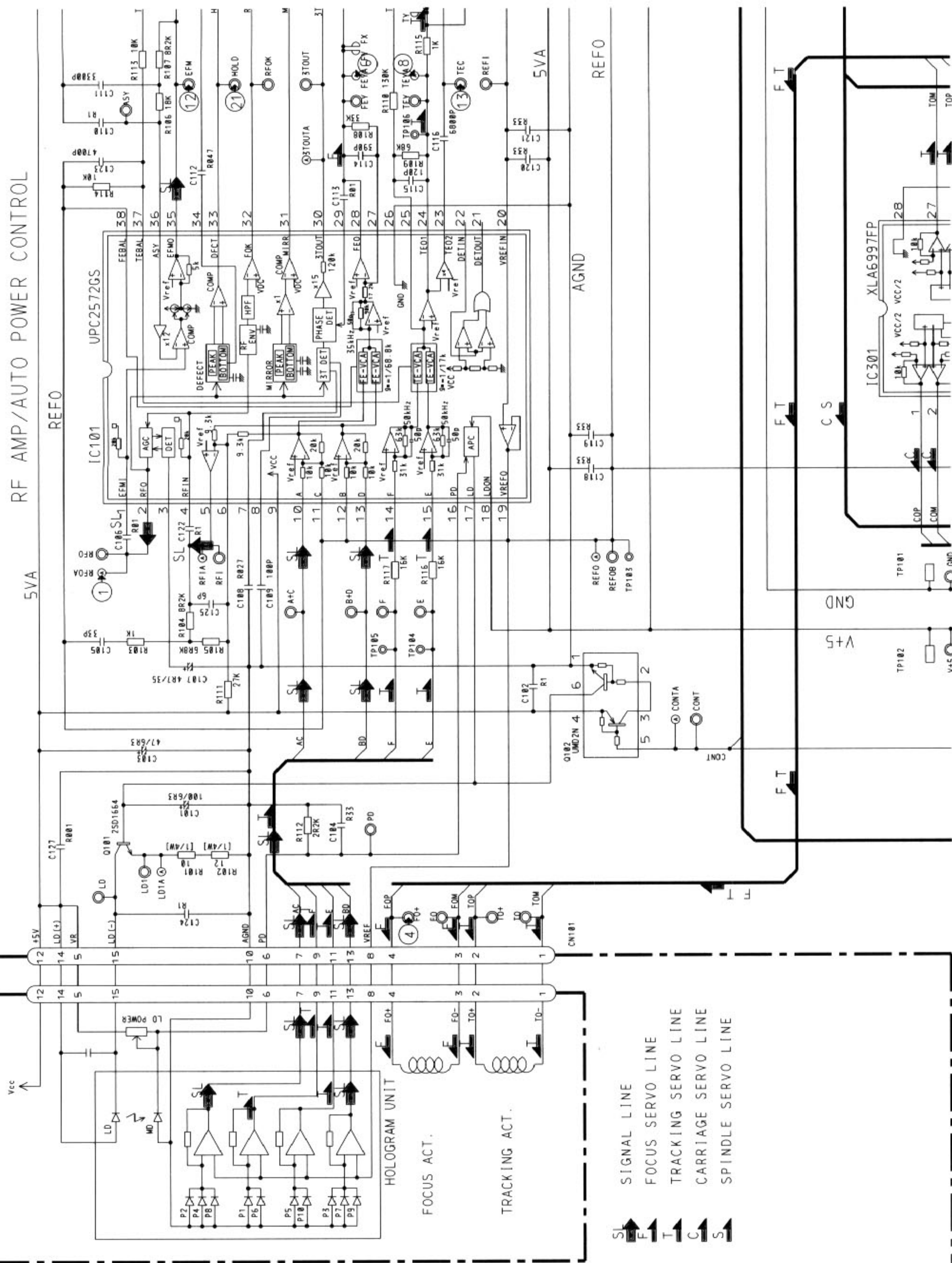
E CONTROL UNIT



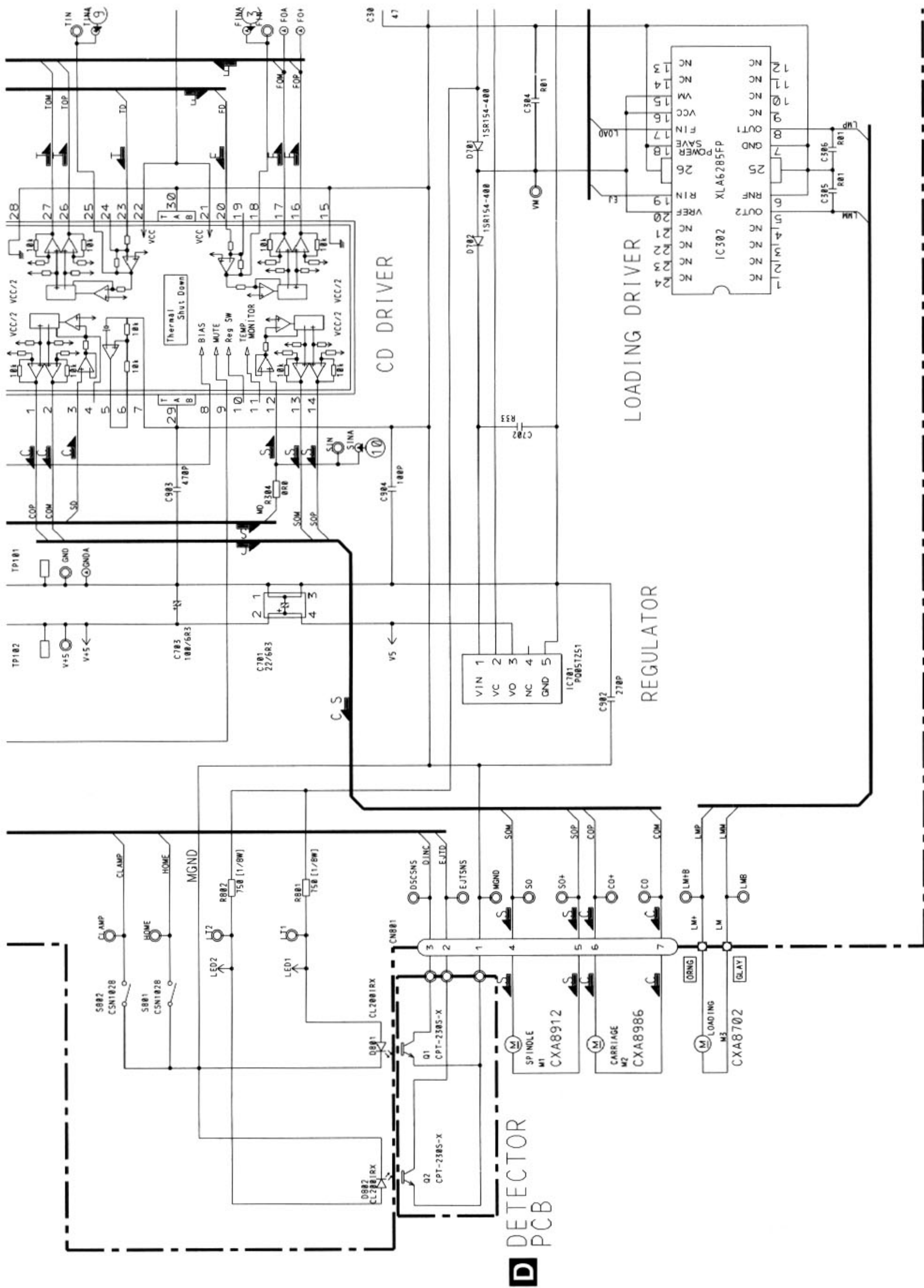










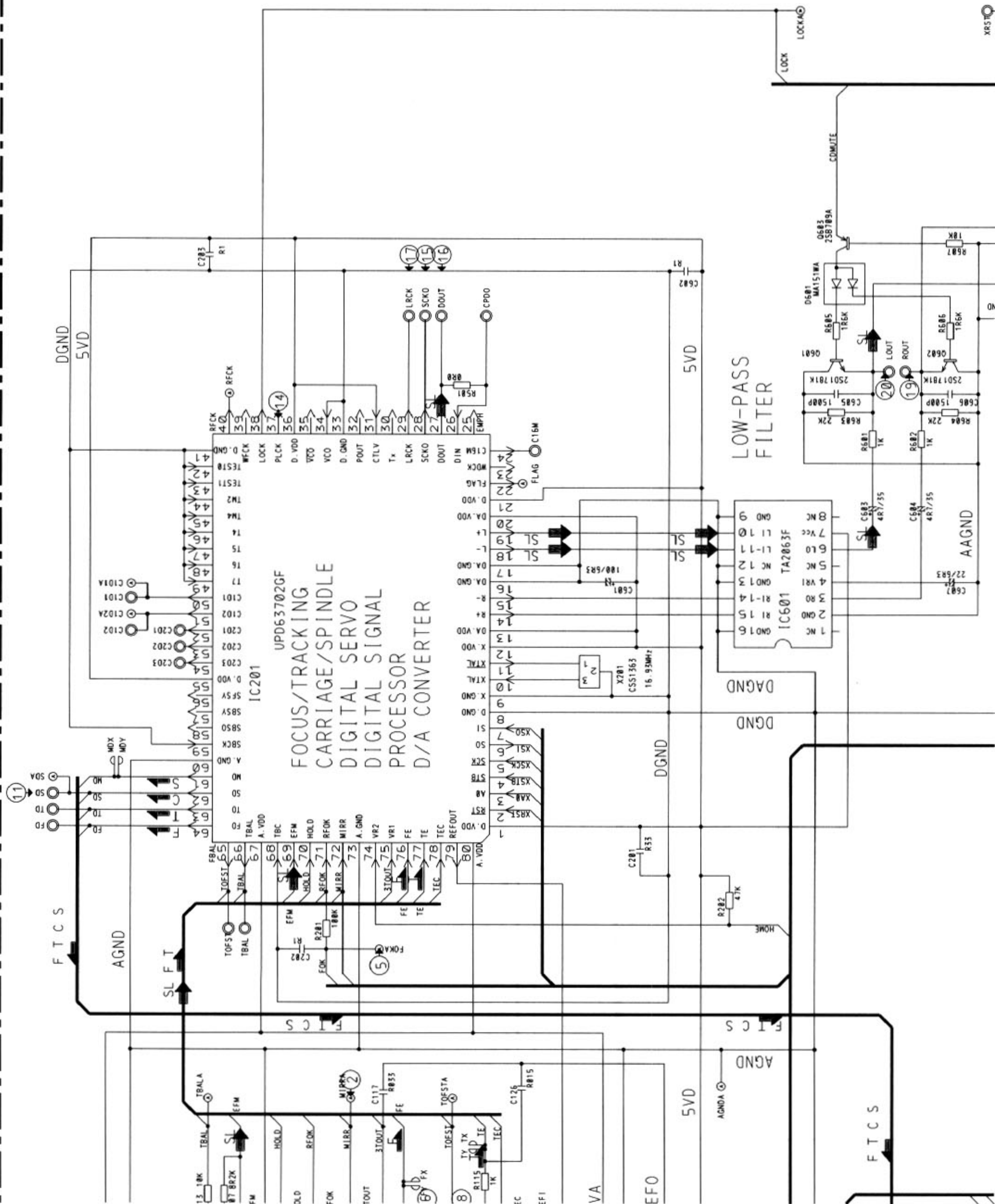


SWITCHES:  
CONTROL UNIT  
S801:HOME SWITCH.....ON-OFF  
S802:CLAMP SWITCH.....ON-OFF  
The underlined indicates the switch position.

E-a E-b

Fig. 11







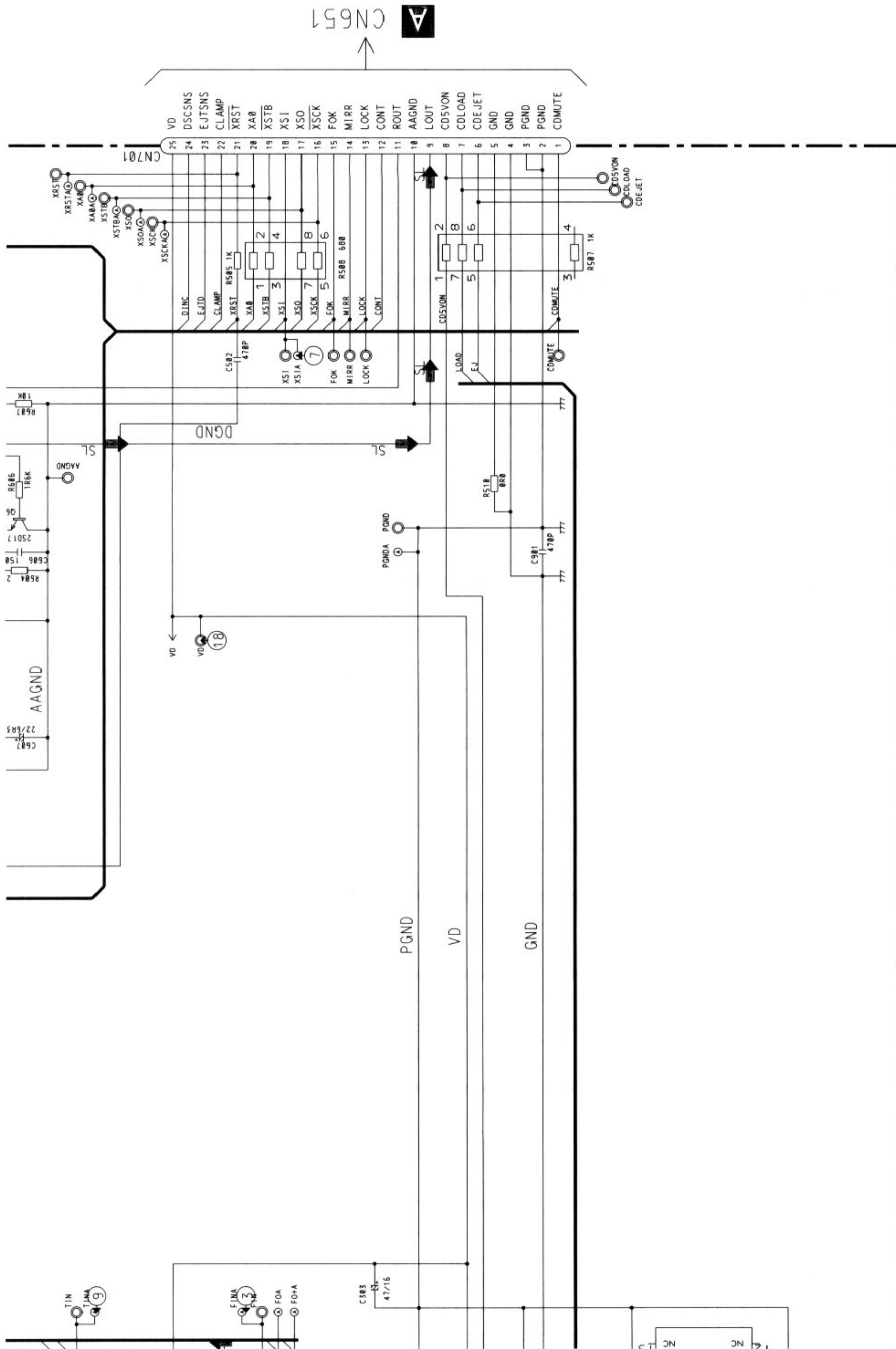
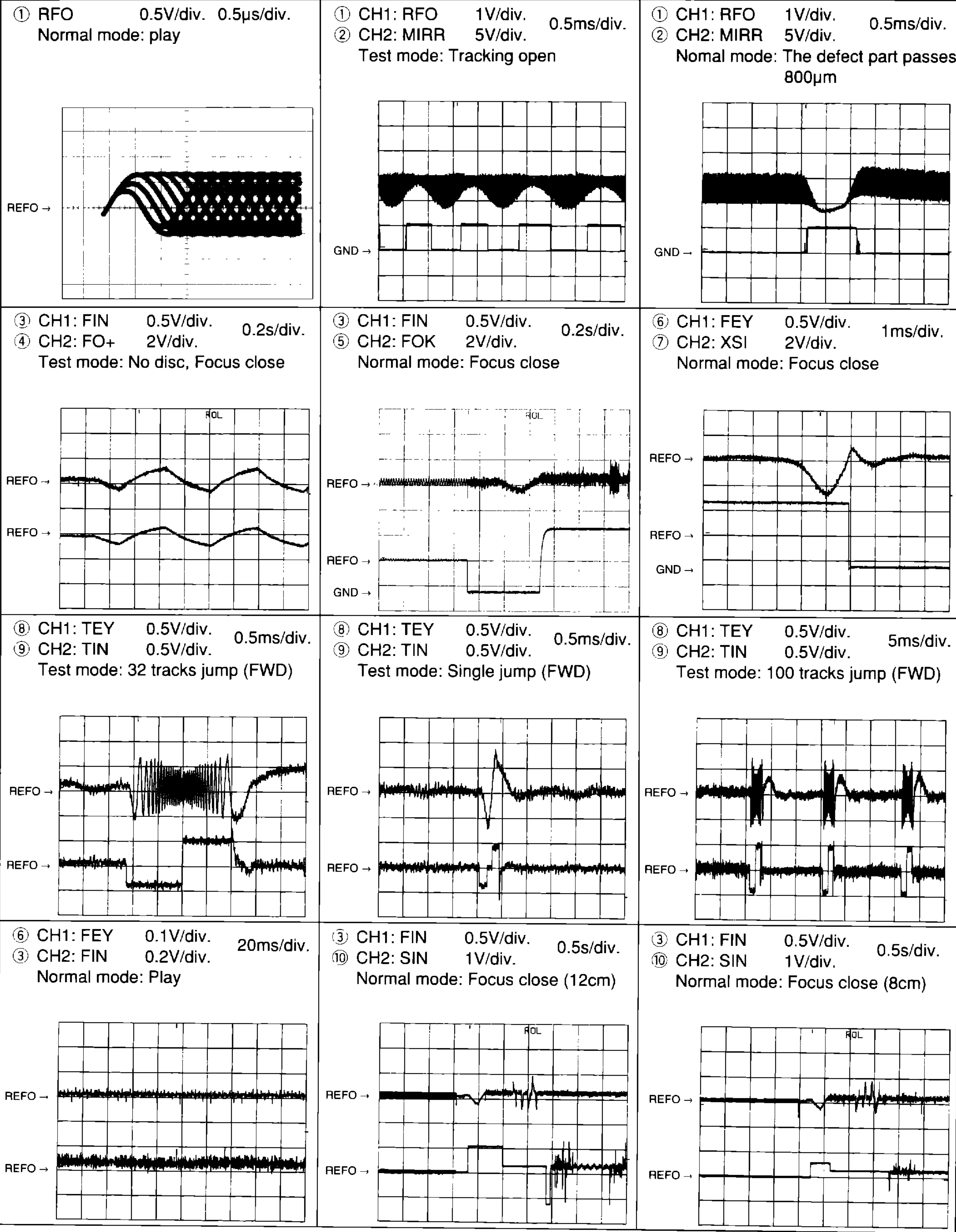


Fig. 12

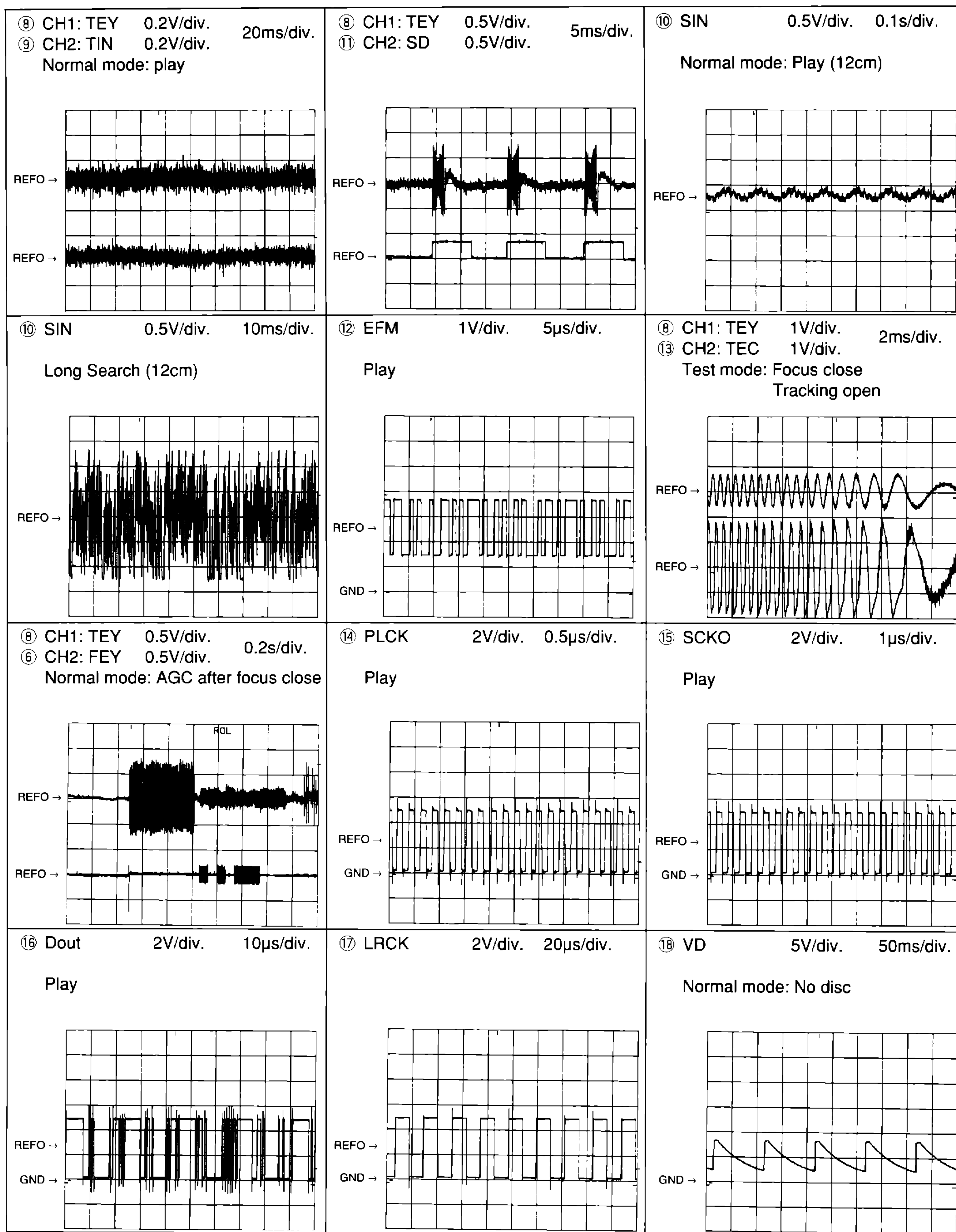


Note:1. The encircled numbers denote measuring pointes in the circuit diagram.  
2. Reference voltage  
REFO:2.5V

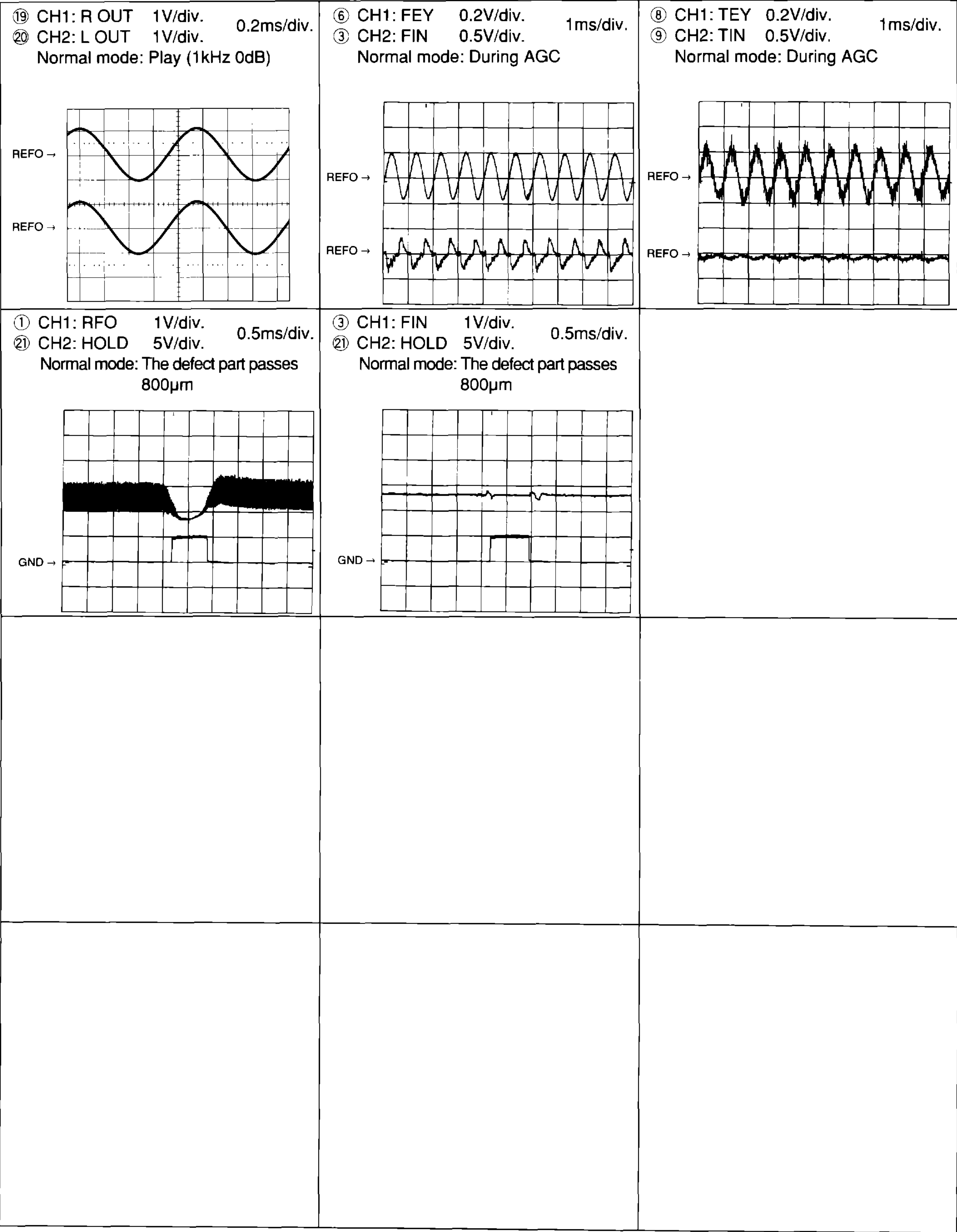
● Waveforms













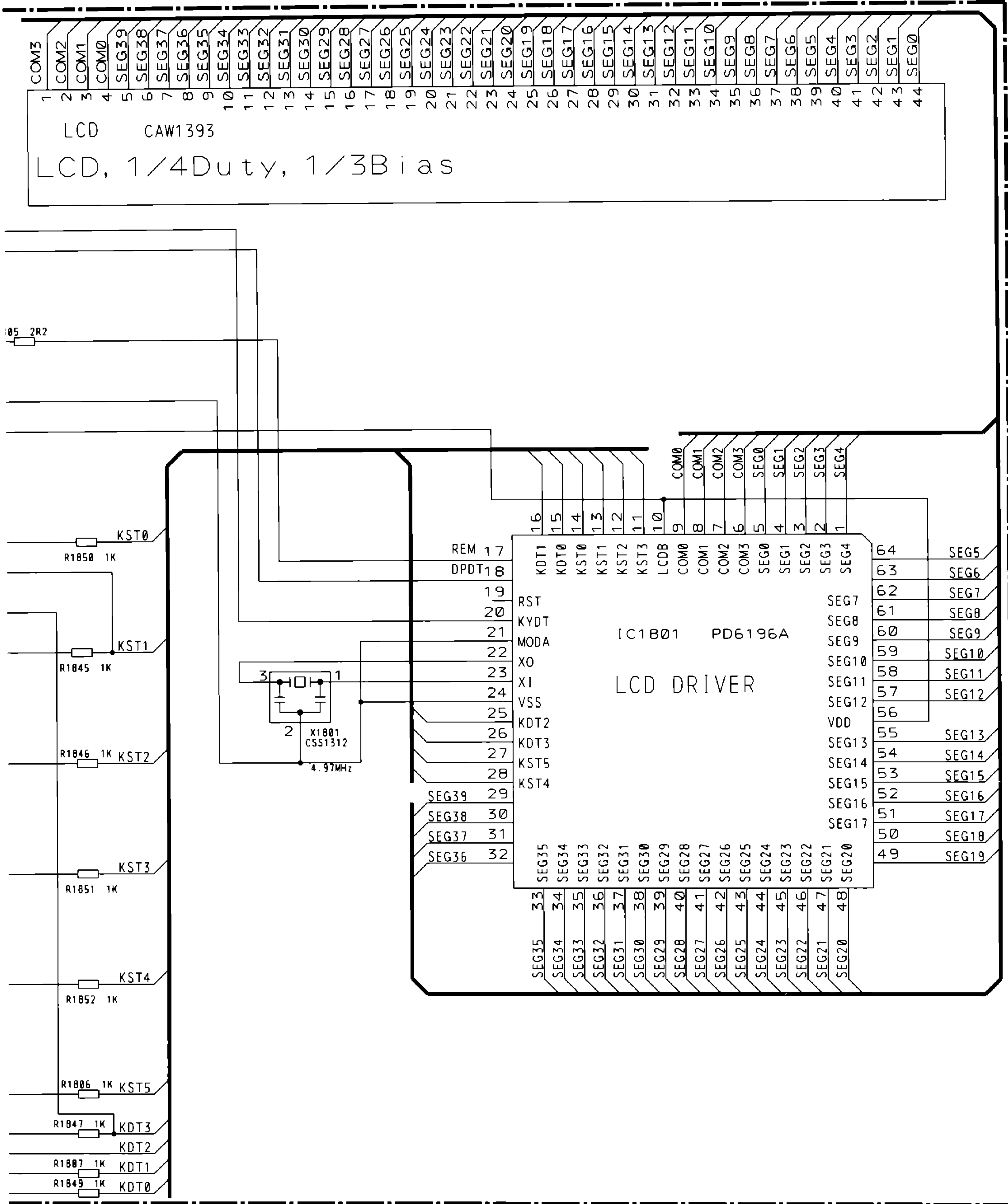








C KEYBOARD UNIT









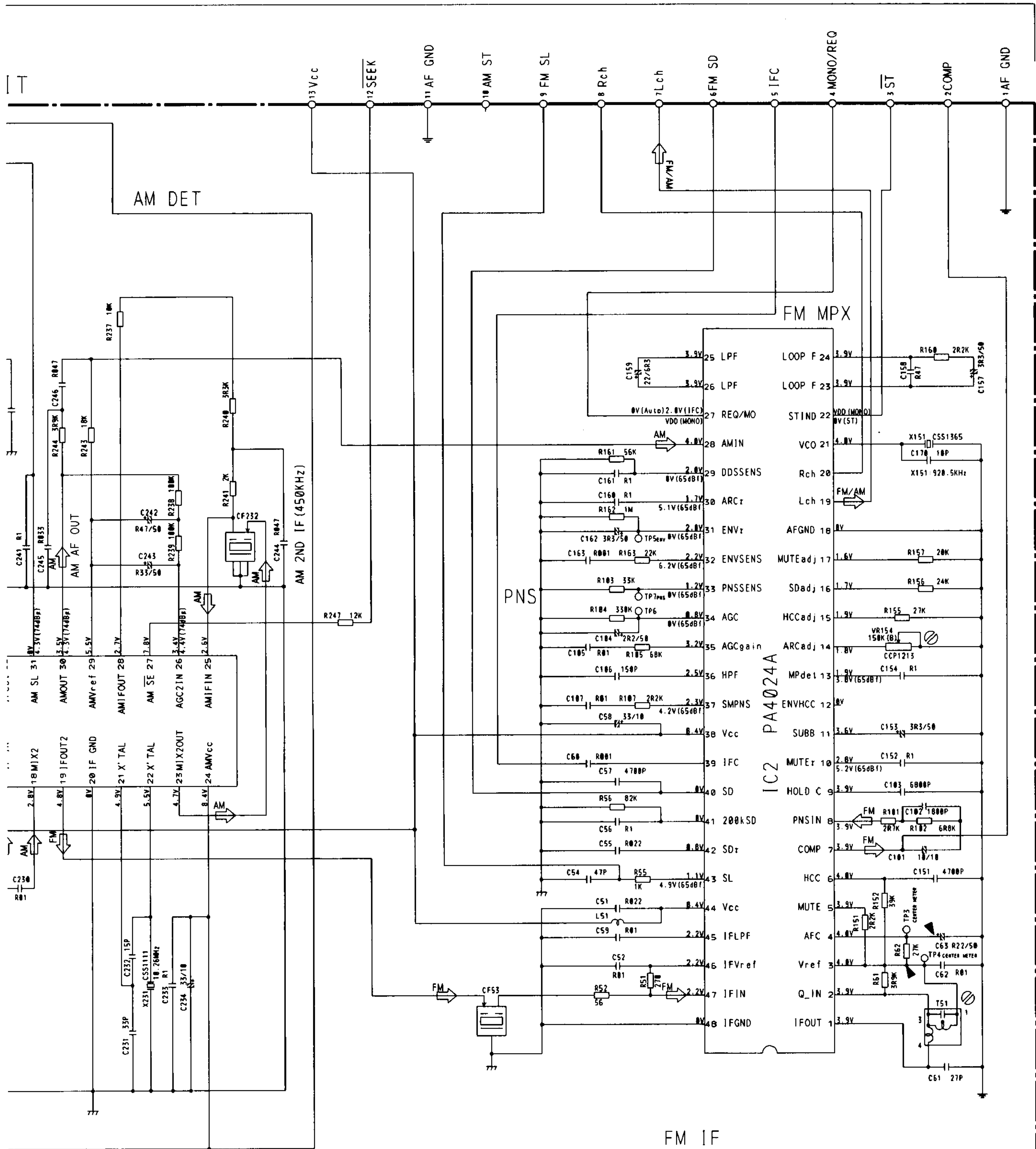


Fig. 14

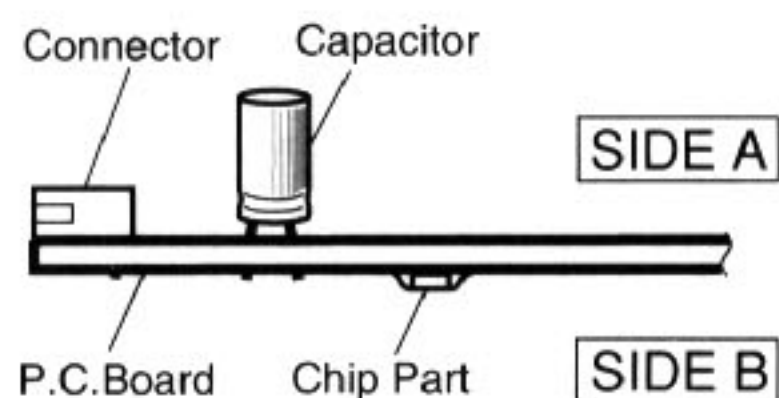


## 4. PCB CONNECTION DIAGRAM

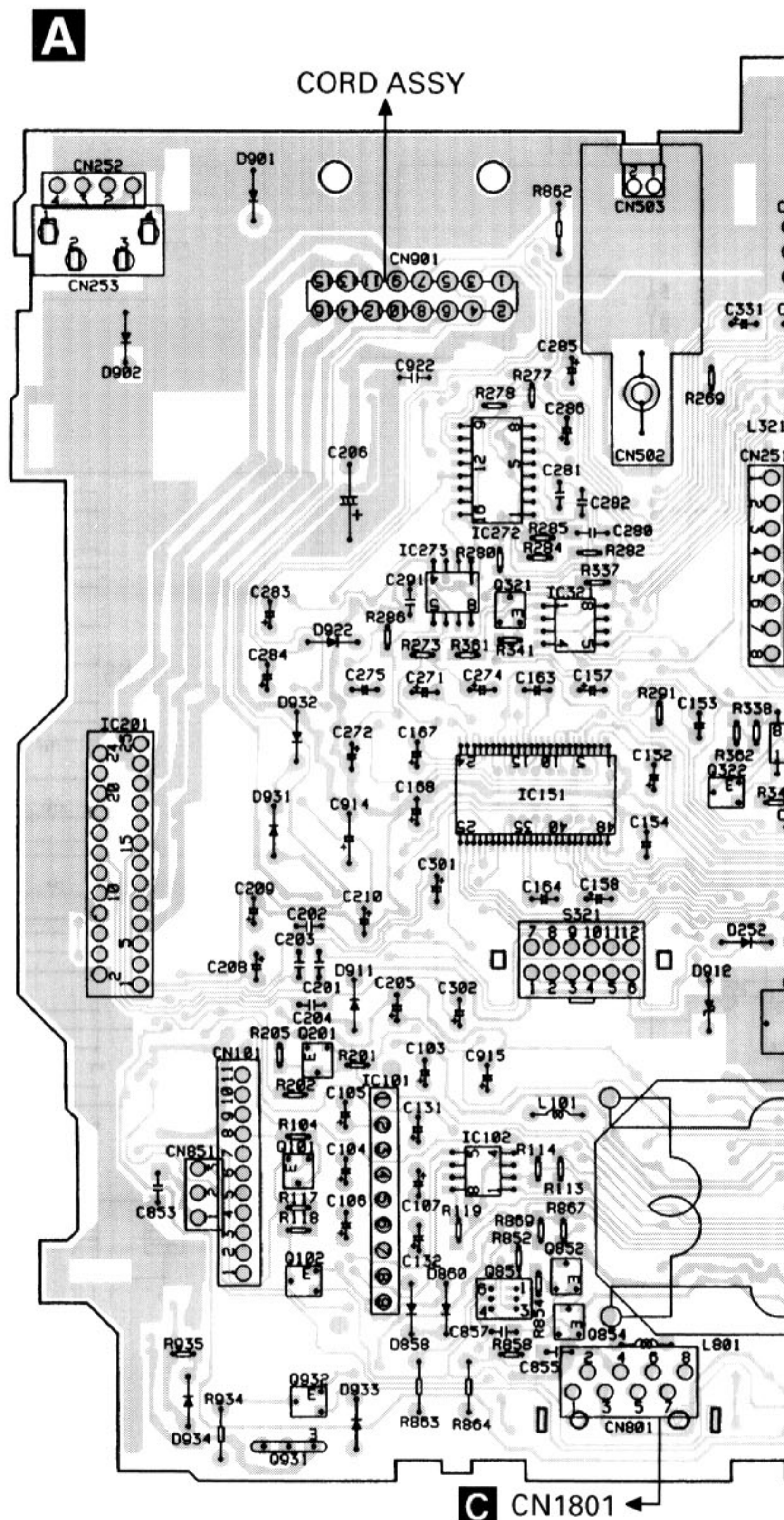
### 4.1 TUNER AMP UNIT

#### NOTE FOR PCB DIAGRAMS

1. The parts mounted on this PCB include all necessary parts for several destination.  
For further information for respective destinations, be sure to check with the schematic diagram.
2. Viewpoint of PCB diagrams



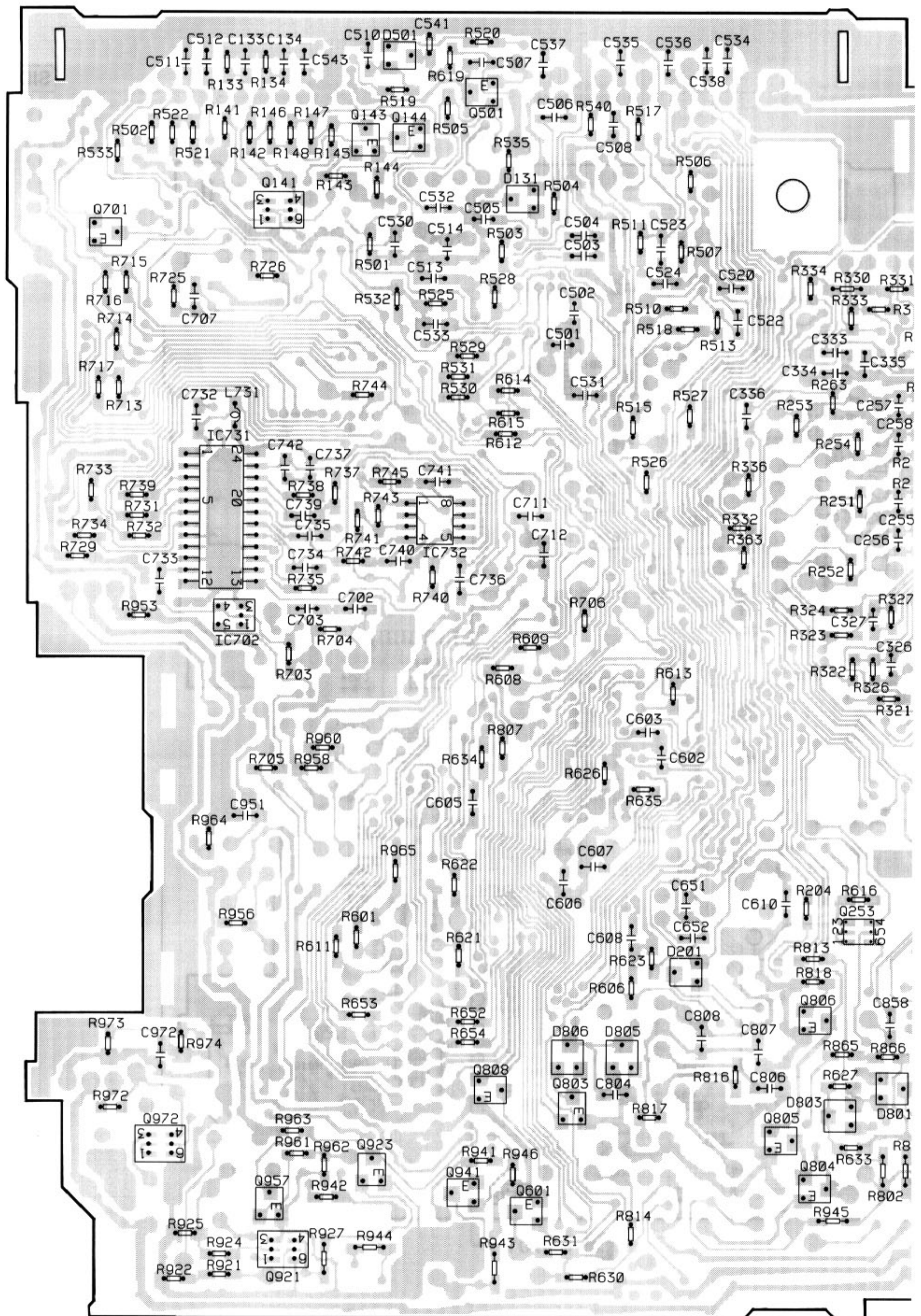
IC. 0	ADJ
IC501	VR701
0502	
IC751	
0142	
0503	
IC273	IC272
0321	IC701
	IC321
	0051
	IC201
	IC322
	0322
IC151	0055
IC001	0054
	0050
	0011
	0052
	0201
IC101	
0009	
0053	
Q101	IC102
	0002
	0071
	0052
	IC041
	0051
0054	0007
	0032
	0031



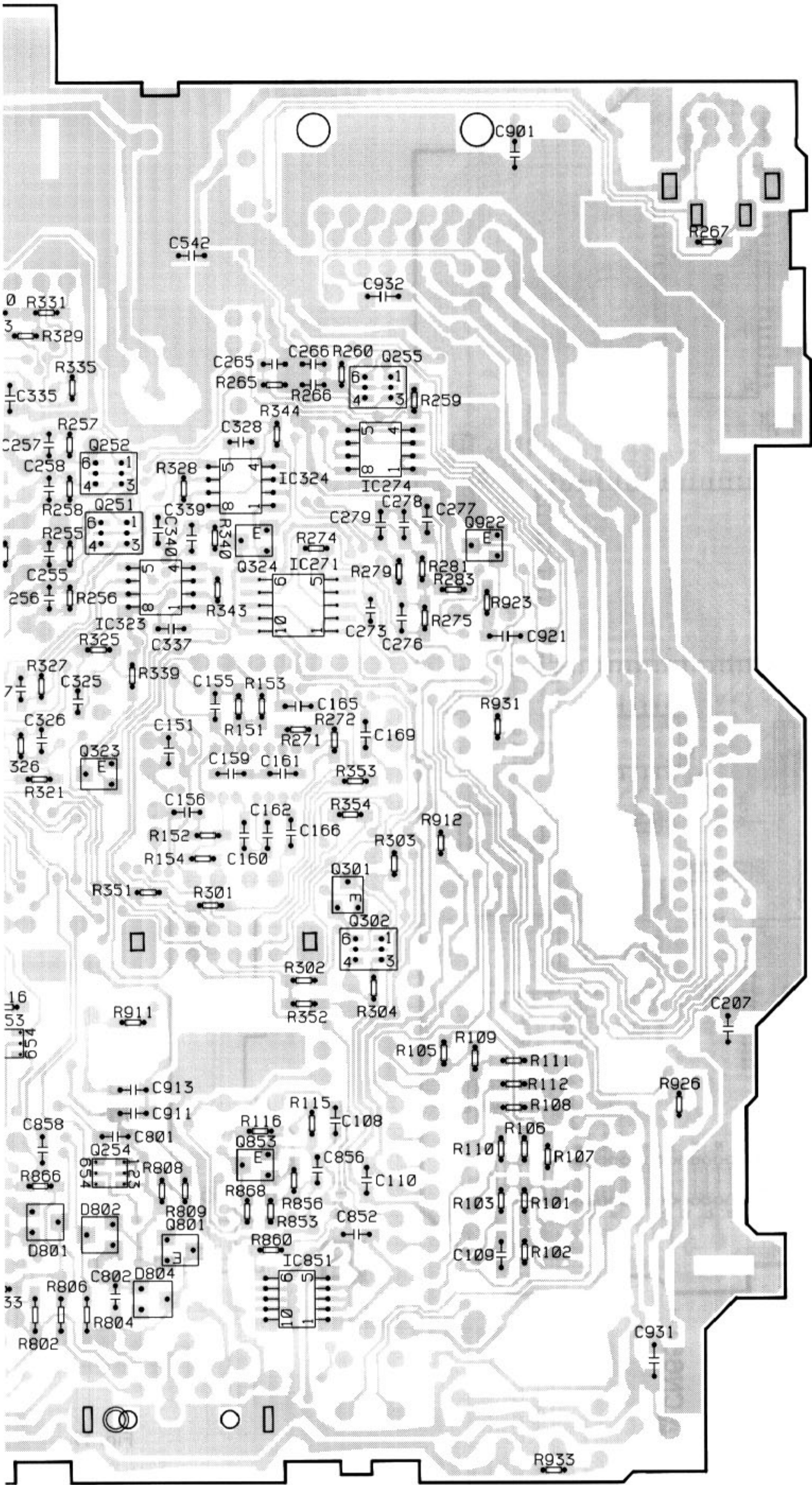






**A****A**





SIDE B

IC.0

Q501  
Q143 Q144

Q141  
Q701

Q255

Q252  
IC324  
IC731 IC274  
Q251  
Q922

Q324 IC271

IC732  
IC323

IC702

Q323

Q301

Q302

Q253

Q806  
Q254 Q853

Q808  
Q803  
Q801  
Q972 Q102  
Q805

Q923  
Q941 Q804  
Q957 Q601

Q921

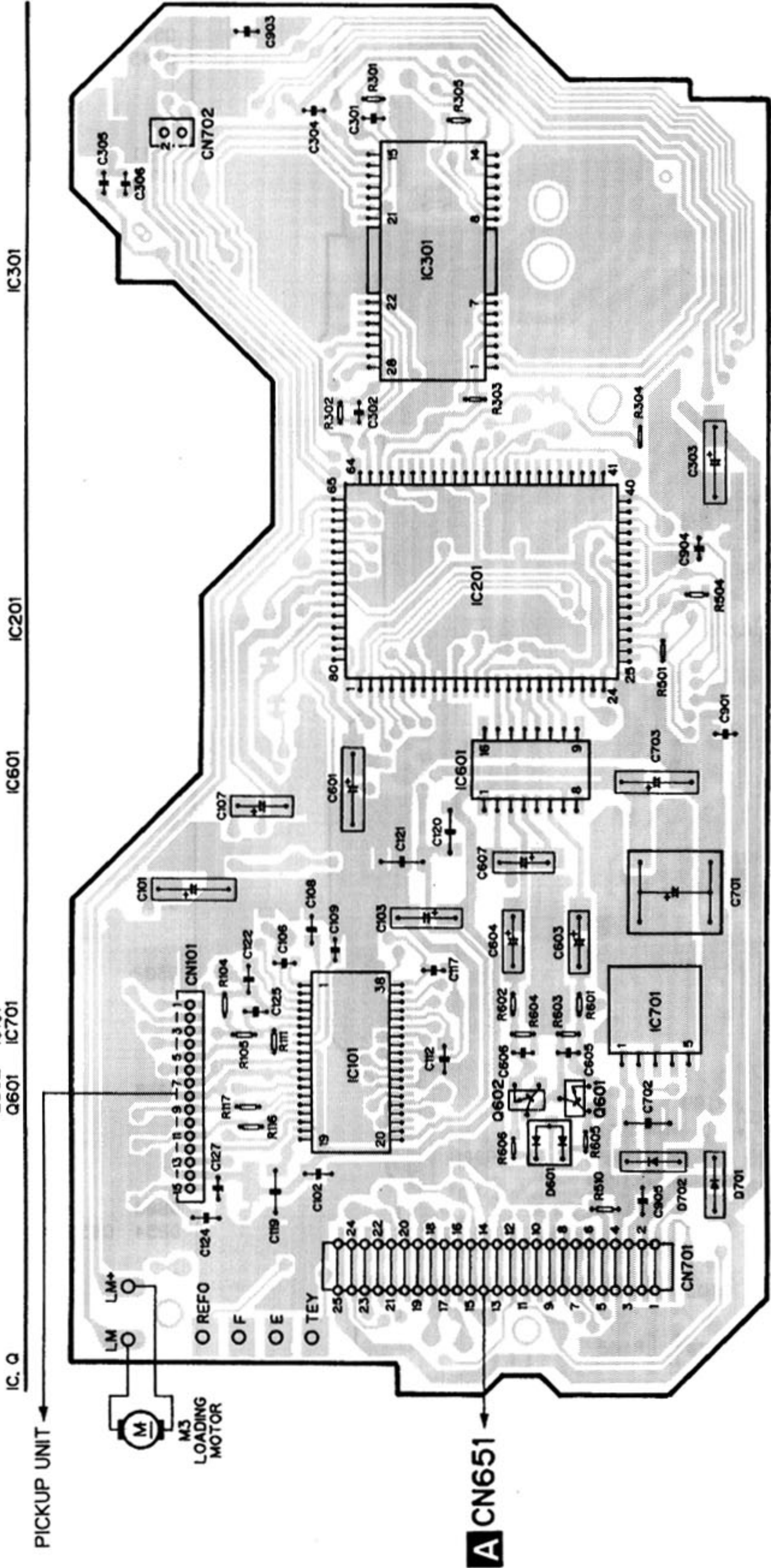
Fig. 16

A



4.2 CD MECHANISM MODULE

**E** CONTROL UNIT



**SIDE A**

**D** DETECTOR PCB

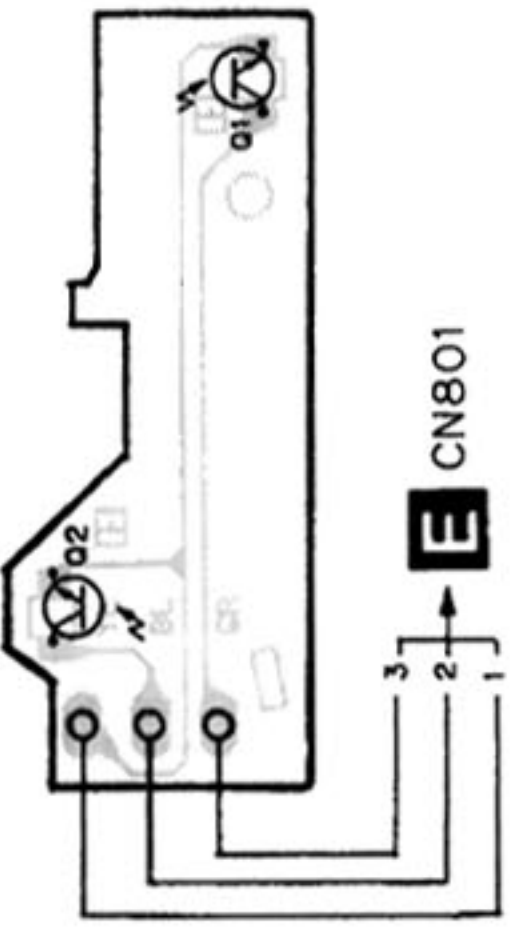


Fig. 17

**D E**



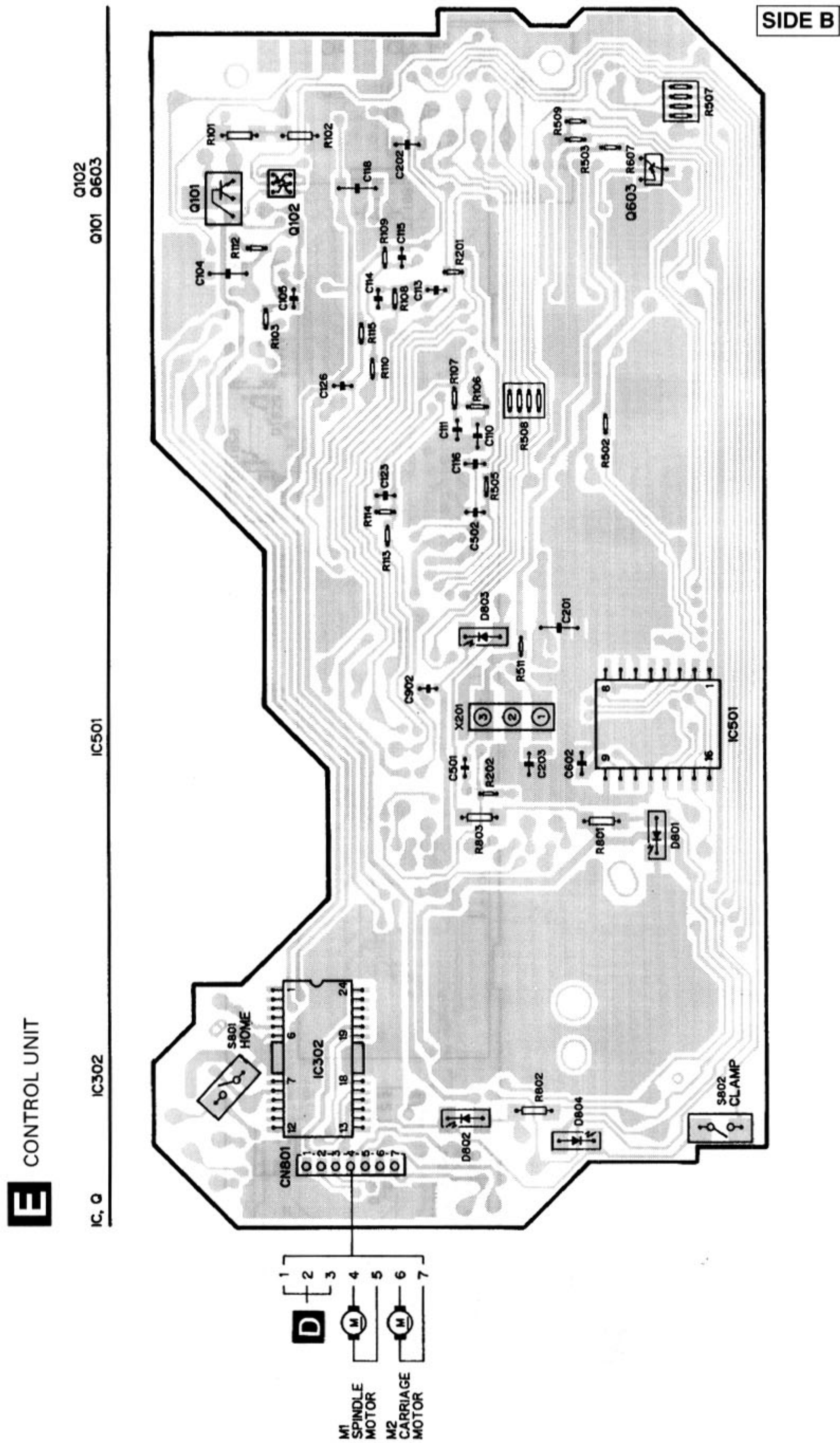
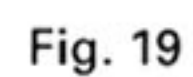


Fig. 18



## C





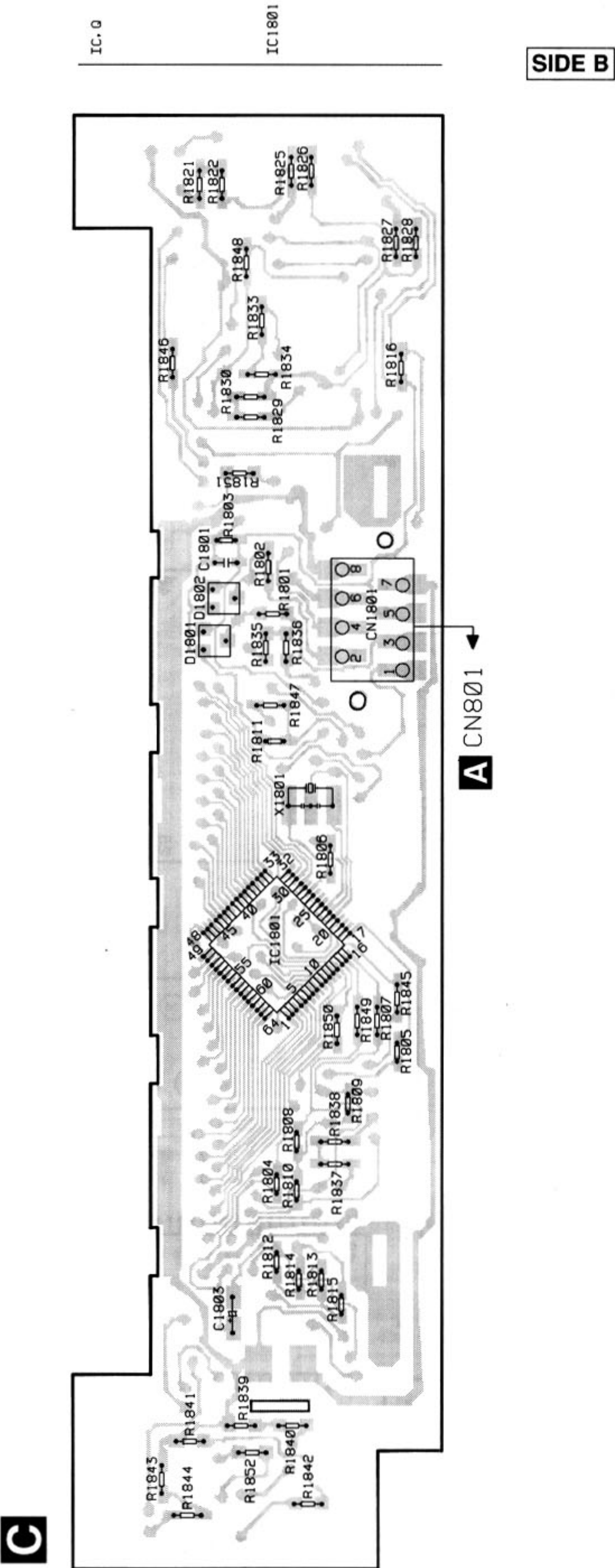
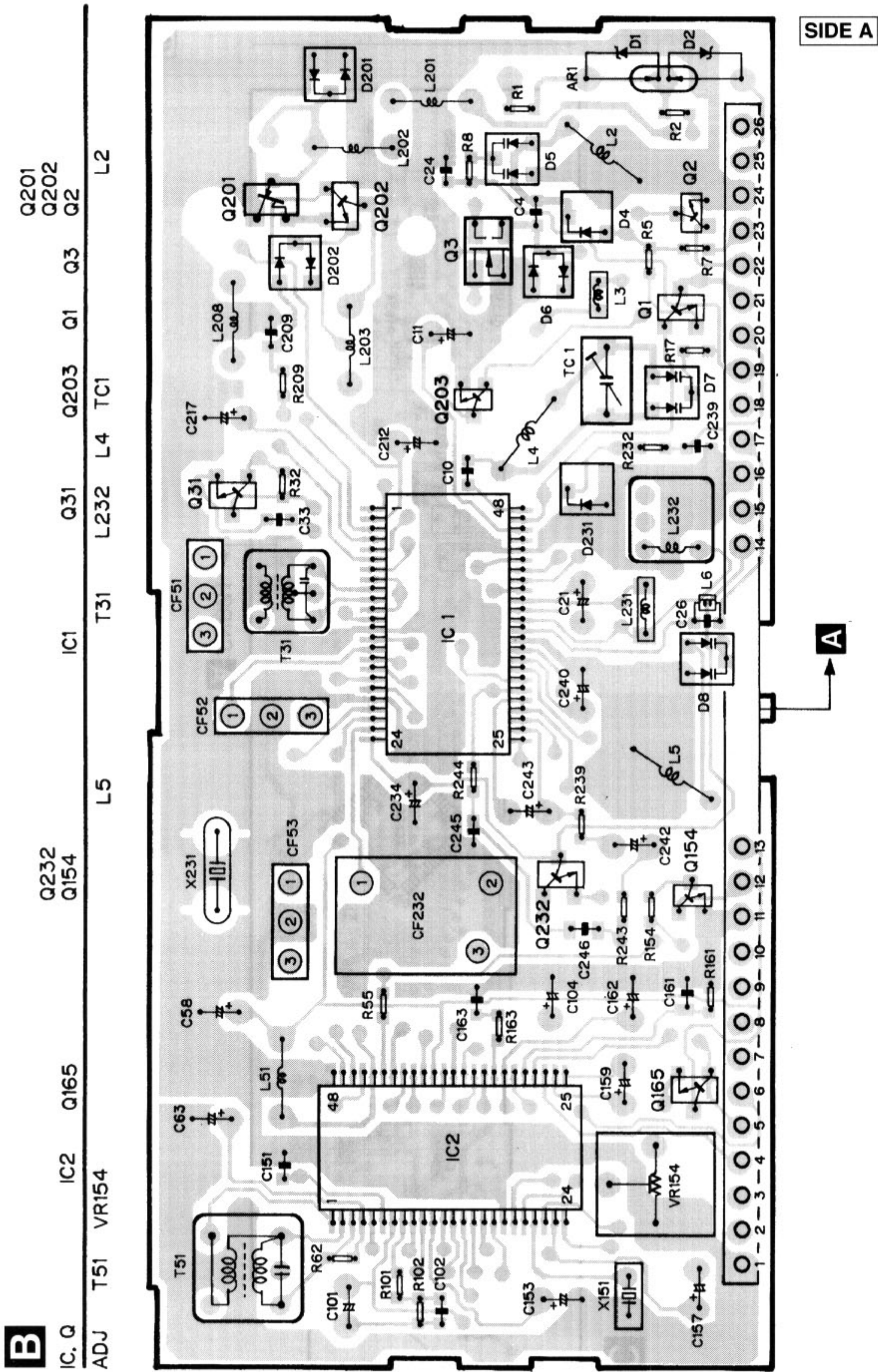


Fig. 20



4.4 FM/AM TUNER UNIT





**SIDE B**

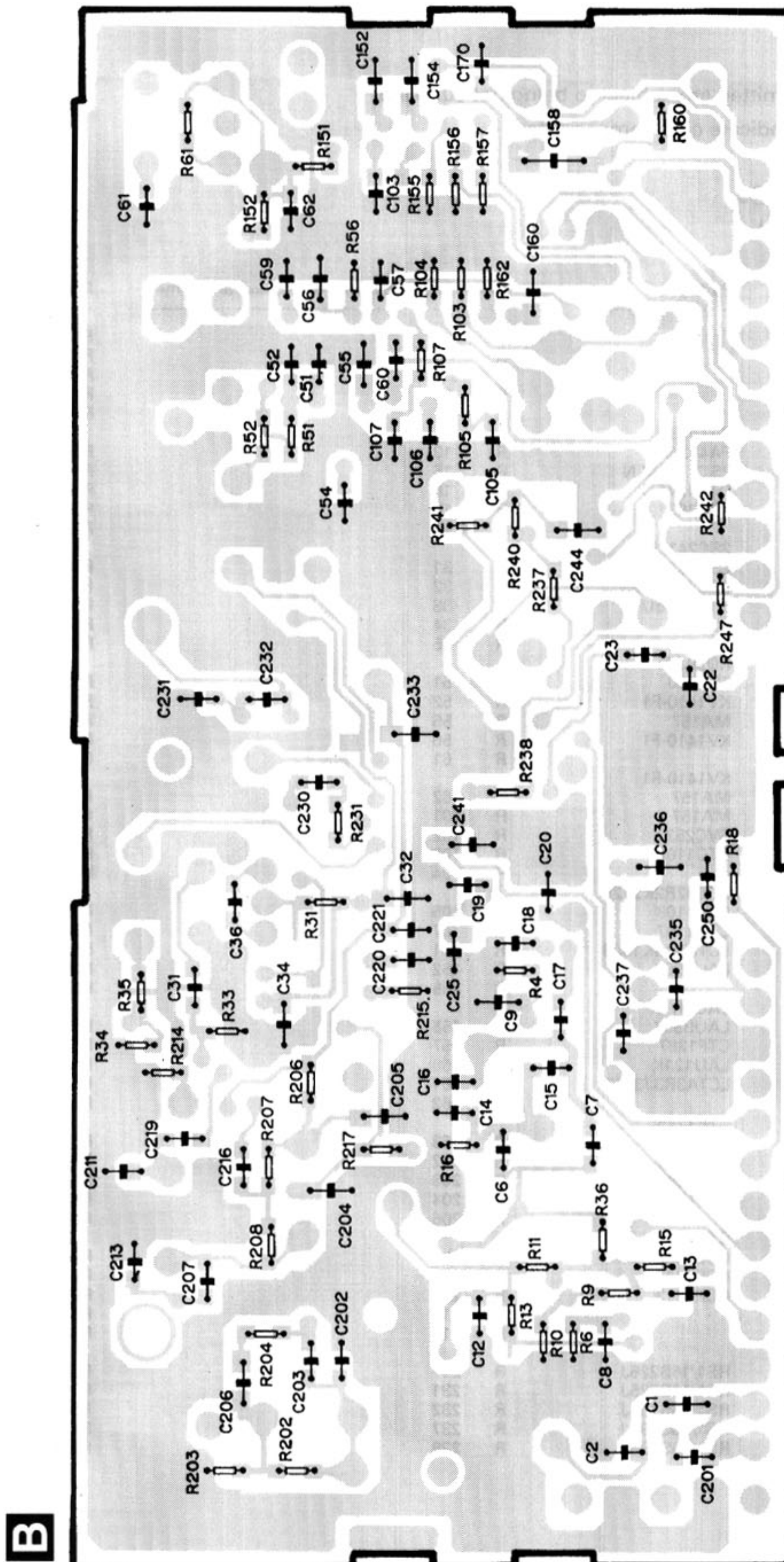


Fig. 22



## 5. ELECTRICAL PARTS LIST

### (1)PARTS LIST

#### NOTE:

- Parts whose parts numbers are omitted are subject to being not supplied.
- The part numbers shown below indicate chip components.

Chip Resistor

RS1/OS○○○○J,RS1/○○S○○○○J

Chip Capacitor (except for CQS.....)

CKS....., CCS....., CSZS.....

====Circuit Symbol & No.====Part Name		Part No.	====Circuit Symbol & No.====Part Name		Part No.
<b>B</b> Unit Number : CWE1485			R	7	RS1/16S123J
Unit Name : FM/AM Tuner Unit			R	8	RS1/16S332J
MISCELLANEOUS			R	9	RS1/16S473J
IC	1	IC	R	10	RS1/16S223J
IC	2	IC	R	11	RS1/16S124J
Q	1	Transistor	R	13	RS1/16S563J
Q	2	Transistor	R	15	RS1/16S271J
Q	3	FET	R	16	RS1/16S104J
			R	17	RS1/16S332J
			R	18	RS1/16S332J
Q	31	Transistor			
Q	201	FET	R	31	RS1/16S470J
Q	202	Transistor	R	32	RS1/16S822J
Q	203	Transistor	R	33	RS1/16S822J
D	1	Diode	R	34	RS1/16S331J
			R	35	RS1/16S331J
D	2	Diode			
D	4	Diode	R	51	RS1/16S271J
D	5	Diode	R	52	RS1/16S560J
D	6	Diode	R	55	RS1/16S102J
D	7	Diode	R	56	RS1/16S823J
			R	61	RS1/16S392J
D	8	Diode			
D	201	Diode	R	62	RS1/16S273J
D	202	Diode	R	101	RS1/16S272J
D	231	Diode	R	102	RS1/16S682J
L	2	Coil	R	103	RS1/16S333J
			R	104	RS1/16S334J
L	3	Inductor			
L	4	Coil	R	105	RS1/16S683J
L	5	Coil	R	107	RS1/16S222J
L	6	Inductor	R	151	RS1/16S222J
L	51	Ferri-Inductor	R	152	RS1/16S393J
			R	155	RS1/16S273J
L	201	Ferri-Inductor			
L	202	Ferri-Inductor	R	156	RS1/16S243J
L	203	Inductor	R	157	RS1/16S203J
L	208	Inductor	R	160	RS1/16S222J
L	231	Inductor	R	161	RS1/16S563J
			R	162	RS1/16S105J
T	31	Coil			
T	51	Coil	R	163	RS1/16S223J
CF	51	Ceramic Filter	R	202	RS1/16S223J
CF	52	Ceramic Filter	R	203	RS1/16S225J
CF	53	Ceramic Filter	R	204	RS1/16S103J
			R	206	RS1/16S220J
CF	232	Ceramic Filter			
X	151	Resonator 920.5kHz	R	207	RS1/16S101J
X	231	Crystal Resonator 10.26MHz	R	208	RS1/16S102J
VR	154	Semi-fixed 150kΩ(B)	R	209	RS1/16S471J
			R	214	RS1/16S822J
			R	215	RS1/16S822J
RESISTORS					
R	1		R	217	RS1/16S102J
R	2		R	231	RS1/16S272J
R	4		R	232	RS1/16S473J
R	5		R	237	RS1/16S103J
R	6		R	238	RS1/16S104J
		RS1/16S225J			
		RS1/16S225J			
		RS1/16S154J			
		RS1/16S391J			
		RS1/16S223J			



====Circuit Symbol & No.===Part Name		Part No.	====Circuit Symbol & No.===Part Name		Part No.
R	239	RS1/16S104J	C	203	CKSRYB332K50
R	240	RS1/16S332J	C	204	CKSQYB473K16
R	241	RS1/16S202J	C	205	CKSQYB473K16
R	243	RS1/16S183J	C	206	CKSQYB104K16
R	244	RS1/16S392J	C	207	CCSRCH560J50
R	247	RS1/16S123J	C	209	CKSQYB104K16
CAPACITORS			C	211	CCSRCH101J50
C	1	CCSQCH6R0D50	C	212	CEJA470M6R3
C	2	CCSRCK2R0C50	C	213	CKSRYB103K25
C	4	CCSRCH820J50	C	216	CCSRCH101J50
C	6	CCSRCH820J50	C	217	CEJA1R5M50
C	8	CKSRYB103K25	C	219	CCSRCH471J50
C	9	CKSQYB104K16	C	220	CKSRYB103K25
C	10	CCSRCKR50C50	C	230	CKSRYB103K25
C	11	CEJA1R0M50	C	231	CCSRCH330J50
C	12	CKSRYB222K50	C	232	CCSRCH150J50
C	13	CKSRYB222K50	C	233	CKSQYB104K16
C	14	CCSRCH220J50	C	234	CEJA330M10
C	15	CCSRCH6R0D50	C	235	CKSRYB332K50
C	16	CCSRCH8R0D50	C	236	CKSQYB473K16
C	17	CKSRYB222K50	C	237	CCSRCH120J50
C	18	CKSRYB103K25	C	239	CKSRYB472K50
C	19	CKSRYB222K50	C	240	CEJAR47M50
C	20	CKSRYB222K50	C	241	CKSQYB104K16
C	21	CEJA100M16	C	242	CEJAR47M50
C	22	CCSRTH9R0D50	C	243	CEJAR33M50
C	23	CCSRTH120J50	C	244	CKSQYB473K16
C	24	CCSRCH471J50	C	245	CKSRYB333K16
C	25	CKSRYB103K25	C	246	CKSQYB473K16
C	31	CKSRYB103K25	C	250	CCSRCH471J50
C	32	CKSQYB472K50	<div style="display: flex; align-items: center;"> <div style="border: 1px solid black; width: 30px; height: 30px; margin-right: 5px;"></div> <div> Unit Number : CWX1889  Unit Name : Control Unit </div> </div>		
C	33	CCSRCH5R0C50			
C	34	CKSQYB104K16	MISCELLANEOUS		
C	36	CCSRRH201J50	IC	101	IC
C	51	CKSRYB223K25	IC	201	IC
C	52	CKSRYB103K25	IC	301	IC
C	54	CCSRCH470J50	IC	302	IC
C	55	CKSQYB223K25	IC	601	IC
C	56	CKSQYB104K16	IC	701	IC
C	57	CKSRYB472K50	Q	101	Transistor
C	58	CEJA330M10	Q	102	Transistor
C	59	CKSRYB103K25	Q	601	Transistor
C	60	CKSRYB102K50	Q	602	Transistor
C	61	CCSRCH270J50	Q	603	Transistor
C	62	CKSRYB103K25	D	601	Diode
C	63	CEJAR22M50	D	701	Diode
C	101	CEJANP100M10	D	702	Diode
C	102	CKSRYB182K50	D	801	
C	103	CKSRYB682K25	D	802	
C	104	CEJA2R2M50	X	201	Ceramic Resonator 16.93MHz
C	105	CKSRYB103K25	S	801	Switch(Home)
C	106	CCSRCH151J50	S	802	Switch(Clamp)
C	107	CKSRYB103K25	RESISTORS		
C	151	CKSRYB472K50	R	101	RS1/8S100J
C	152	CKSQYB104K16	R	102	RS1/8S120J
C	153	CEJA3R3M50	R	103	RS1/16S102J
C	154	CKSQYB104K16	R	104	RS1/16S822J
C	157	CEJA3R3M50	R	105	RS1/16S682J
C	158	CKSYB474K16	R	106	RS1/16S183J
C	159	CEJA220M6R3	R	107	RS1/16S822J
C	160	CKSQYB104K16	R	108	RS1/16S333J
C	161	CKSQYB104K16	R	109	RS1/16S683J
C	162	CEJA3R3M50	R	110	RS1/16S134J
C	163	CKSRYB102K50			
C	170	CCSRCH100D50			
C	201	CCSRCH471J50			
C	202	CCSRCH100D50			



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====Circuit Symbol & No.===Part Name			Part No.	====Circuit Symbol & No.===Part Name			Part No.
D	805	Diode	MA3075(L)	R	283		See Contrast table
D	806	Diode	MA3039(H)	R	284		See Contrast table
D	851	LED	See Contrast table	R	285		See Contrast table
D	901	Diode	ERA15-02VH	R	286		See Contrast table
D	902	Diode	ERA15-02VH	R	291		See Contrast table
D	911	Diode	ERA15-02VH	R	301		RS1/10S151J
D	912	Diode	HZS6L(B1)	R	302		RS1/10S151J
D	921	Diode	HZS7L(C3)	R	303		RS1/10S104J
D	922	Diode	ERA15-02VH	R	304		RS1/10S104J
D	923	Diode	HZS7L(A1)	R	351		RS1/10S0R0J
D	931	Diode	ERA15-02VH	R	352		RS1/10S0R0J
D	932	Diode	ERA15-02VH	R	353		RS1/10S0R0J
D	933	Diode	See Contrast table	R	354		RS1/10S0R0J
D	934	Diode	See Contrast table	R	502		RS1/10S222J
D	941	Diode	1SS133	R	503		RS1/10S222J
D	951	Diode	HZS9L(B3)	R	504		RS1/10S102J
D	952	Diode	HZS9L(A2)	R	505		RS1/10S222J
D	953	Diode	1SS133	R	506		RS1/10S681J
D	971	Diode	HZS9L(B1)	R	507		RS1/10S472J
L	501	Ferri-Inductor	LAU2R2K	R	508		RS1/10S682J
L	502	Ferri-Inductor	LAU2R2K	R	509		RS1/10S682J
L	503	Ferri-Inductor	LAU2R2K	R	510		RS1/10S561J
L	601	Ferri-Inductor	LAU2R2K	R	511		RS1/10S103J
L	602	Inductor	LAU100K	R	512		RS1/10S472J
L	801	Ferri-Inductor	LAU2R2K	R	513		RS1/10S222J
L	802	Transformer	MTX9006	R	514		RS1/10S392J
TH	601	Thermistor	CCX1031	R	515		RS1/10S392J
X	501	Crystal Resonator 7.200MHz	CSS1379	R	516		RS1/10S152J
X	601	Ceramic Resonator 4.194MHz	CSS1047	R	517		RS1/10S102J
		FM/AM Tuner Unit	CWE1485	R	518		RS1/10S272J
BZ	601	Buzzer	See Contrast table	R	519		RS1/10S102J
RESISTORS				R	520		RS1/10S103J
R	133		RS1/10S162J	R	521		RS1/10S182J
R	134		RS1/10S162J	R	525		RS1/10S473J
R	141		RS1/10S0R0J	R	526		RS1/10S224J
R	142		RS1/10S0R0J	R	527		RS1/10S223J
R	151		RS1/10S272J	R	528		RS1/10S562J
				R	529		RS1/10S472J
R	152		RS1/10S272J	R	530		RS1/10S472J
R	153		RS1/10S151J	R	531		RS1/10S472J
R	154		RS1/10S151J	R	532		RS1/10S473J
R	201		RS1/10S103J	R	533		RS1/10S102J
R	202		RS1/10S331J	R	534		RS1/10S0R0J
				R	540		RS1/10S0R0J
R	204		RS1/10S103J	R	601		RS1/10S222J
R	205		RS1/10S103J				
R	253		See Contrast table	R	605		RS1/10S473J
R	254		See Contrast table	R	606		RS1/10S473J
R	257		See Contrast table	R	607		RS1/10S473J
				R	610		RS1/10S473J
R	258		See Contrast table	R	611		RS1/10S222J
R	259		See Contrast table				
R	260		See Contrast table	R	612		RS1/10S681J
R	263		See Contrast table	R	613		RS1/10S681J
R	264		See Contrast table	R	614		RS1/10S681J
				R	615		RS1/10S681J
R	265		RS1/10S223J	R	616		See Contrast table
R	266		RS1/10S223J				
R	268		See Contrast table	R	617		See Contrast table
R	269		See Contrast table	R	618		RS1/10S473J
R	271		See Contrast table	R	619		RS1/10S393J
				R	620		RS1/10S473J
R	272		See Contrast table	R	621		RS1/10S473J
R	273		See Contrast table				
R	274		See Contrast table	R	622		RS1/10S222J
R	275		See Contrast table	R	623		RS1/10S473J
R	277		See Contrast table	R	624		RS1/10S333J
				R	625		RS1/10S104J
R	278		See Contrast table	R	626		RS1/10S473J
R	279		See Contrast table				
R	280		See Contrast table				
R	281		See Contrast table				
R	282		See Contrast table				



====Circuit Symbol & No.===Part Name		Part No.	====Circuit Symbol & No.===Part Name		Part No.
R	627	RS1/10S473J	R	960	RS1/10S472J
R	628	RS1/10S393J	R	961	RS1/10S103J
R	629	RS1/10S473J	R	962	RS1/10S473J
R	630	See Contrast table	R	963	RS1/10S473J
R	631	See Contrast table	R	965	RS1/10S0R0J
R	632		R	971	RD1/4PU221J
R	634	RN1/10SE2202D	R	972	RS1/10S221J
R	635	RS1/10S102J	R	973	RS1/10S472J
R	651	RS1/10S0R0J	R	974	RS1/10S222J
R	652	RS1/10S681J			
		RS1/10S681J	CAPACITORS		
R	653	RS1/10S681J	C	133	CKSQYB473K50
R	654	RS1/10S681J	C	134	CKSQYB473K50
R	802	RS1/8S222J	C	135	CEJA4R7M35
R	804	RS1/8S222J	C	136	CEJA4R7M35
R	806	RS1/8S222J	C	137	CEJA2R2M50
R	807				
R	808	RS1/10S102J	C	138	CEJA2R2M50
R	809	RS1/10S223J	C	151	CKSQYB473K50
R	810	RS1/10S682J	C	152	CEJA470M10
R	811	RS2PMF100J	C	153	CEJANP100M16
		RD1/4PU471J	C	154	CEJANP100M16
R	812				
R	813	RS1/10S103J	C	155	CKSQYB822K50
R	814	RS1/10S224J	C	156	CKSQYB822K50
R	815	RS1/10S222J	C	157	CEJA1R0M50
R	816	RD1/4PU102J	C	158	CEJA1R0M50
		RS1/10S132J	C	159	CKSQYB183K50
R	817				
R	818	RS1/10S822J	C	160	CKSQYB183K50
R	819	RS1/10S104J	C	161	CKSQYB102K50
R	851	RS2PMF220J	C	162	CKSQYB102K50
R	852	See Contrast table	C	163	CEJANP2R2M35
		See Contrast table	C	164	CEJANP2R2M35
R	853				
R	854	See Contrast table	C	165	CKSQYB333K50
R	856	See Contrast table	C	166	CKSQYB333K50
R	858	See Contrast table	C	167	CEJA220M16
R	861	See Contrast table	C	168	CEJA2R2M50
			C	169	CKSQYB104K50
R	862				
R	863	See Contrast table	C	201	CKSQYB224K16
R	864	See Contrast table	C	202	CKSQYB224K16
R	865	See Contrast table	C	203	CKSQYB224K16
R	866	See Contrast table	C	204	CKSQYB224K16
			C	205	CEJA1R0M50
R	867				
R	868	See Contrast table	C	206	3300μF/16V
R	869	See Contrast table	C	207	CCH1150
R	911	See Contrast table	C	208	CKSQYB473K50
R	912	RS1/10S392J	C	209	CEJA100M16
		RS1/10S101J	C	210	CEJA1R0M50
R	921				
R	922	RS1/10S103J	C	253	CEJA330M16
R	923	RS1/10S473J	C	254	CEJA4R7M35
R	924	RS1/10S103J	C	257	CEJA4R7M35
R	925	RS1/10S103J	C	258	See Contrast table
		RS1/10S473J	C	271	See Contrast table
R	926				
R	927	RS1/10S472J	C	272	See Contrast table
R	933	RS1/8S224J	C	273	See Contrast table
R	934	See Contrast table	C	274	See Contrast table
R	941	See Contrast table	C	275	See Contrast table
		RS1/10S102J	C	276	See Contrast table
R	942				
R	951	RS1/10S822J	C	277	See Contrast table
R	952	RD1/4PU221J	C	278	See Contrast table
R	953	RD1/4PU301J	C	279	See Contrast table
R	954	RS1/10S1R0J	C	280	See Contrast table
		RD1/4PU331J	C	281	See Contrast table
R	955				
R	956	RD1/4PU331J	C	282	See Contrast table
R	957	RS1/10S472J	C	283	See Contrast table
R	958	RD1/4PU102J	C	284	See Contrast table
R	959	RS1/10S472J	C	285	See Contrast table
		RD1/4PU102J	C	286	See Contrast table



====Circuit Symbol & No.===Part Name		Part No.
C	291	See Contrast table
C	301	CEJA100M16
C	302	CEJA100M16
C	501	CCSQCH150K50
C	502	CCSQCH150K50
C	503	CKSQYB103K50
C	504	CKSQYB103K50
C	505	CCSQCH101K50
C	506	CKSQYB103K50
C	507	CKSQYB103K50
C	508	CKSQYB102K50
C	509	CEJA220M10
C	510	CKSQYB223K50
C	513	CKSQYB103K50
C	514	CCSQCH101K50
C	515	CEJA220M6R3
C	516	CKSQYB103K50
C	517	CEJA220M6R3
C	518	CKSQYB103K50
C	519	CEJA220M10
C	520	CKSQYB103K50
C	521	4.7μF/16V
C	522	CCH1250
C	523	CKSQYB103K50
C	524	CKLSR473K16
C	525	4.7μF/16V
C	526	CCH1250
C	528	CKSQYB103K50
C	529	CKSQYB103K50
C	531	CKSQYB223K50
C	532	CKSQYB223K50
C	536	CKSQYB103K50
C	543	CKSQYB473K50
C	601	CEJA4R7M35
C	602	CKSQYB103K50
C	603	CKSQYB473K50
C	605	CKSQYB473K50
C	651	CCSQCH821J50
C	652	CCSQCH821J50
C	802	CKSQYB104K25
C	803	CEJA100M16
C	804	CKSQYB103K50
C	805	CEJA100M16
C	806	CKSQYB103K50
C	807	CKSQYB333K50
C	808	CKSQYB333K50
C	855	See Contrast table
C	856	See Contrast table
C	857	See Contrast table
C	858	See Contrast table
C	911	CKSQYB103K50
C	913	CKSQYB472K50
C	914	1000μF/16V
C	915	CCH1149
C	921	CEJA470M10
C	922	CKSYB105K16
C	922	CKSYB102K50
C	931	See Contrast table
C	932	CKSYB103K50
C	941	CEJA2R2M50
C	951	CKSQYB103K50
C	952	CEJA101M16
C	954	CEAS331M10
C	971	CKSQYB473K50
C	972	CKSQYB102K50
C	973	CEAL101M10

CONTRAST TABLE of TUNER AMP UNIT  
DEH-636/ES and DEH-536/ES have the same construction except for the following:

Symbol & Description	Part No.	
	DEH-636/ES	DEH-536/ES
IC271 IC	M5282FP	Not used
IC272 IC	MC14052BF	Not used
IC273 IC	NJM2068MD	Not used
IC274 IC	NJM2068MD	Not used
Q252 Transistor	IMH3A	Not used
Q254 Transistor	IMD2A	Not used
Q601 Transistor	DTC114EK	Not used
Q851 Transistor	IMD2A	Not used
Q852, 854 Transistor	DTC123EK	Not used
Q853 Transistor	DTC123EK	Not used
Q931 Transistor	2SB1243	Not used
Q932 Transistor	DTC114EK	Not used
D252 Diode	1SS133	Not used
D851 LED	BR4361F	Not used
D933, 934 Diode	ERA15-02VH	Not used
BZ601 Buzzer	CPV1011	Not used
R253, 254	RS1/10S681J	Not used
R257, 258	RS1/10S223J	Not used
R259, 260	RS1/10S821J	RS1/10S681J
R263	RS1/10S0R0J	Not used
R264, 617	RS1/10S0R0J	Not used
R268, 269	Not used	RS1/10S0R0J
R271, 272	RS1/10S183J	Not used
R273, 277, 278, 852	RS1/10S103J	Not used
R274	RS1/10S243J	Not used
R275	RS1/10S683J	Not used
R279, 281, 283	RS1/10S104J	Not used
R280, 282, 284	RS1/10S104J	Not used
R285, 286	RS1/10S105J	Not used
R291, 867, 869	RS1/10S473J	Not used
R616	Not used	RS1/10S473J
R630	RS1/10S202J	Not used
R631, 866	RS1/10S102J	Not used
R851	RS1/8S331J	Not used
R853, 865	RS1/10S103J	Not used
R854, 858	RS1/10S163J	Not used
R856	RS1/10S163J	Not used
R861	RS1/10S103J	Not used
R862, 863, 864	RD1/4PU102J	Not used
R868	RS1/10S473J	Not used
R933	RS1/10S472J	Not used
R934	RD1/4PU272J	Not used
C257, 258	CCSQCH221J50	Not used
C271	CEJA220M10	Not used
C272	CEJA101M10	Not used
C273	CKSQYB472K50	Not used
C274, 283, 284	CEJA4R7M35	Not used
C275	CEJANP220M10	Not used
C276	CKSQYB222K50	Not used
C277	CKSQYB183K50	Not used
C278, 858	CKSQYB473K50	Not used
C279	CKSQYB273K50	Not used
C280	CKSYB103K50	Not used
C281	CKSQYB223K50	Not used
C282	CKSQYB153K50	Not used
C285, 286	CEJA1R0M50	Not used
C291, 855, 857	CKSQYB103K50	Not used
C856	CKSQYB103K50	Not used
C931	CKSYB103K50	Not used



====Circuit Symbol & No.===Part Name		Part No.
<div>C</div> Unit Number : Unit Name : Keyboard Unit		
MISCELLANEOUS		
IC 1801	IC	PD6196A
IC 1802	HIC Module	RS-140
D 1801	Diode	DA204K
D 1802	Diode	DA204K
D 1821	LED	CL220PGC
D 1822	LED	CL220PGC
D 1824	LED	CL170PGCD
D 1825	LED	CL170PGCD
D 1826	LED	CL170PGCD
D 1827	LED	CL170PGCD
D 1828	LED	CL170PGCD
D 1829	LED	CL170PGCD
D 1830	LED	CL170PGCD
D 1831	LED	CL170PGCD
X 1801	Ceramic Resonator 4.97MHz	CSS1312
S 1801	Push Switch	CSG1085
S 1802	Push Switch	CSG1086
S 1803	Push Switch	CSG1085
S 1804	Push Switch	CSG1084
S 1805	Push Switch	CSG1086
S 1806	Push Switch	CSG1084
S 1807	Push Switch	CSG1061
S 1808	Push Switch	CSG1061
S 1809	Push Switch	CSG1085
S 1810	Push Switch	CSG1086
S 1811	Push Switch	CSG1085
S 1812	Push Switch	CSG1086
S 1813	Push Switch	CSG1061
S 1814	Push Switch	CSG1061
S 1815	Push Switch	CSG1084
S 1816	Push Switch	CSG1085
S 1817	Push Switch	CSG1086
S 1818	Push Switch	CSG1061
S 1819	Push Switch	CSG1061
S 1820	Push Switch	CSG1084
S 1821	Push Switch	CSG1084
IL 1801	EL LCD	CEL1489 CAW1393
RESISTORS		
R 1801		RS1/8S222J
R 1802		RS1/8S222J
R 1803		RS1/10S472J
R 1804		RS1/10S121J
R 1805		RS1/10S2R2J
R 1806		RS1/8S102J
R 1807		RS1/8S102J
R 1813		RS1/10S0R0J
R 1814		RS1/10S102J
R 1816		RS1/8S0R0J
R 1821		RS1/8S151J
R 1822		RS1/8S101J
R 1825		RS1/8S151J
R 1826		RS1/8S101J
R 1827		RS1/8S101J
R 1828		RS1/8S101J
R 1829		RS1/8S151J
R 1830		RS1/8S101J
R 1833		RS1/8S151J
R 1834		RS1/8S101J

====Circuit Symbol & No.===Part Name		Part No.
R 1835		RS1/8S101J
R 1836		RS1/8S101J
R 1837		RS1/8S101J
R 1838		RS1/8S101J
R 1839		RS1/8S101J
R 1840		RS1/8S101J
R 1841		RS1/8S101J
R 1842		RS1/8S101J
R 1843		RS1/8S101J
R 1844		RS1/8S101J
R 1845		RS1/8S102J
R 1846		RS1/8S102J
R 1847		RS1/8S102J
R 1848		RS1/8S102J
R 1849		RS1/8S102J
R 1850		RS1/8S102J
R 1851		RS1/8S102J
R 1852		RS1/8S102J
CAPACITORS		
C 1801		CKSQYB104K50
C 1803		CEV100M16
<div>D</div> Unit Number : Unit Name : Detector PCB		
Q 1	Photo-transistor	CPT-230S-X
Q 2	Photo-transistor	CPT-230S-X
Miscellaneous Parts List		
M 1	Pickup Unit(Service)	CXX1230
M 2	Motor Unit(Spindle)	CXA8912
M 2	CRG Motor Unit(Carriage)	CXA8986
M 3	Load Motor Unit>Loading)	CXA8702



6. ADJUSTMENT

6.1 TUNER ADJUSTMENT

● Connection Diagram

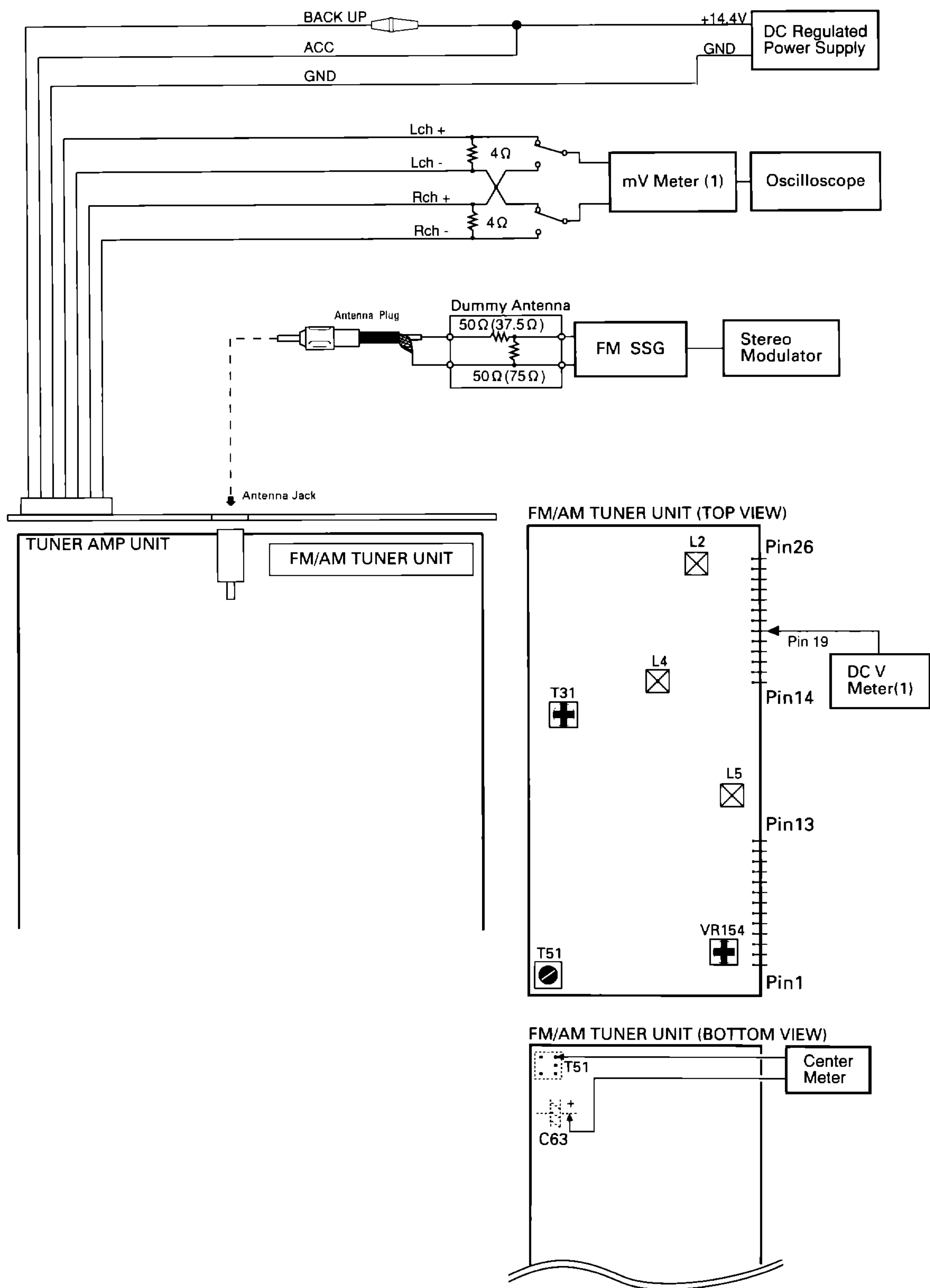


Fig. 23



FM ADJUSTMENT

Modulation    M:MONO MOD., 400Hz 30%(22.5kHz Dev.)  
                  S:STEREO MOD., 1kHz, L or R=30%(20.25kHz+7.5kHz Dev.)

NOTE:Before proceeding to further adjustments after switching power ON, let the tuner run for ten minutes to allow the circuits to stabilize.

FM ADJUSTMENT

	No.	FM SSG		Displayed	Adjustment	Adjustment Method (Switch Position)
		Frequency(MHz)	Level(dBf)	Frequency(MHz)		
TUN Volt	1	.....	.....	108.0	L5	DC V Meter(1) : 6V
IF	1	98.1 M	60	98.1	T51	Center Meter : 0
ANT Coil	1	98.1 M	5	98.1	L2	mV Meter(1) : Maximum
RF Coil	1	98.1 M	5	98.1	L4	mV Meter(1) : Maximum
IFT	1	98.1 M	5	98.1	T31	mV Meter(1) : Maximum (STEREO MODE)
ARC	1	98.1 S	39	98.1	VR154	mV Meter(1) : Separation 5dB (STEREO MODE)



## 6.2 CHECKING THE GRATING

### ● Checking the Grating After Changing the Service Pickup Unit

· **Note :**

Unlike previous CD mechanism modules the grating angle of the pickup unit cannot be adjusted after the pickup unit is changed. The pickup unit in the CD mechanism module is adjusted on the production line to match the CD mechanism module and is thus the best adjusted pickup unit for the CD mechanism module. Changing the pickup unit is thus best considered as a last resort. However, if the pickup unit must be changed, the grating should be checked using the procedure below.

· **Purpose :**

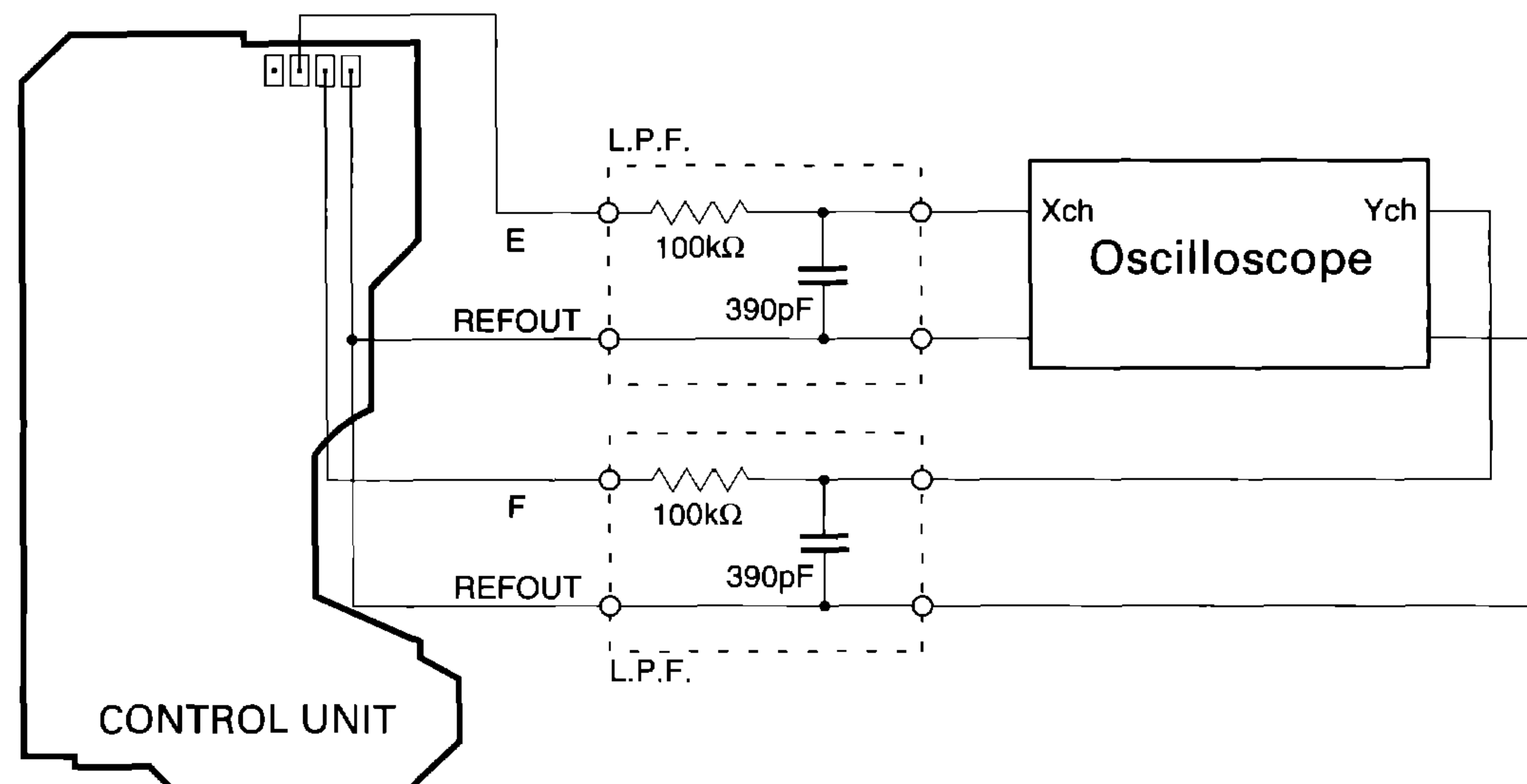
To check that the grating is within an acceptable range.

· **Symptoms of Mal-adjustment :**

If the grating is off by a large amount symptoms such as being unable to close tracking, being unable to perform track search operations, or track searching taking a long time, may appear.

· **Method :**

- |                       |                            |
|-----------------------|----------------------------|
| · Measuring Equipment | · Oscilloscope, Two L.P.F. |
| · Measuring Points    | · E, F, REFOUT             |
| · Disc                | · ABEX TCD-784             |
| · Mode                | · TEST MODE                |



· **Checking Procedure**

1. In test mode, load the disc and switch the 5V regulator on.
2. Using the → and ← buttons, move the pickup unit to the innermost track.
3. Press key 3 to close focus, the display should read "91". Press key 2 to implement the tracking balance adjustment the display should now read "81". Press key 3 4 times. The display will change, returning to "81" on the fourth press.
4. As shown in the diagram above, monitor the LPF outputs using the oscilloscope and check that the phase difference is within 75°. Refer to the photographs supplied to determine the phase angle.
5. If the phase difference is determined to be greater than 75° try changing the pickup unit to see if there is any improvement. If, after trying this a number of times, the grating angle does not become less than 75° then the mechanism should be judged to be at fault.

· **Note**

Because of eccentricity in the disc and a slight misalignment of the clamping center the grating waveform may be seen to "wobble" ( the phase difference changes as the disc rotates). The angle specified above indicates the average angle.

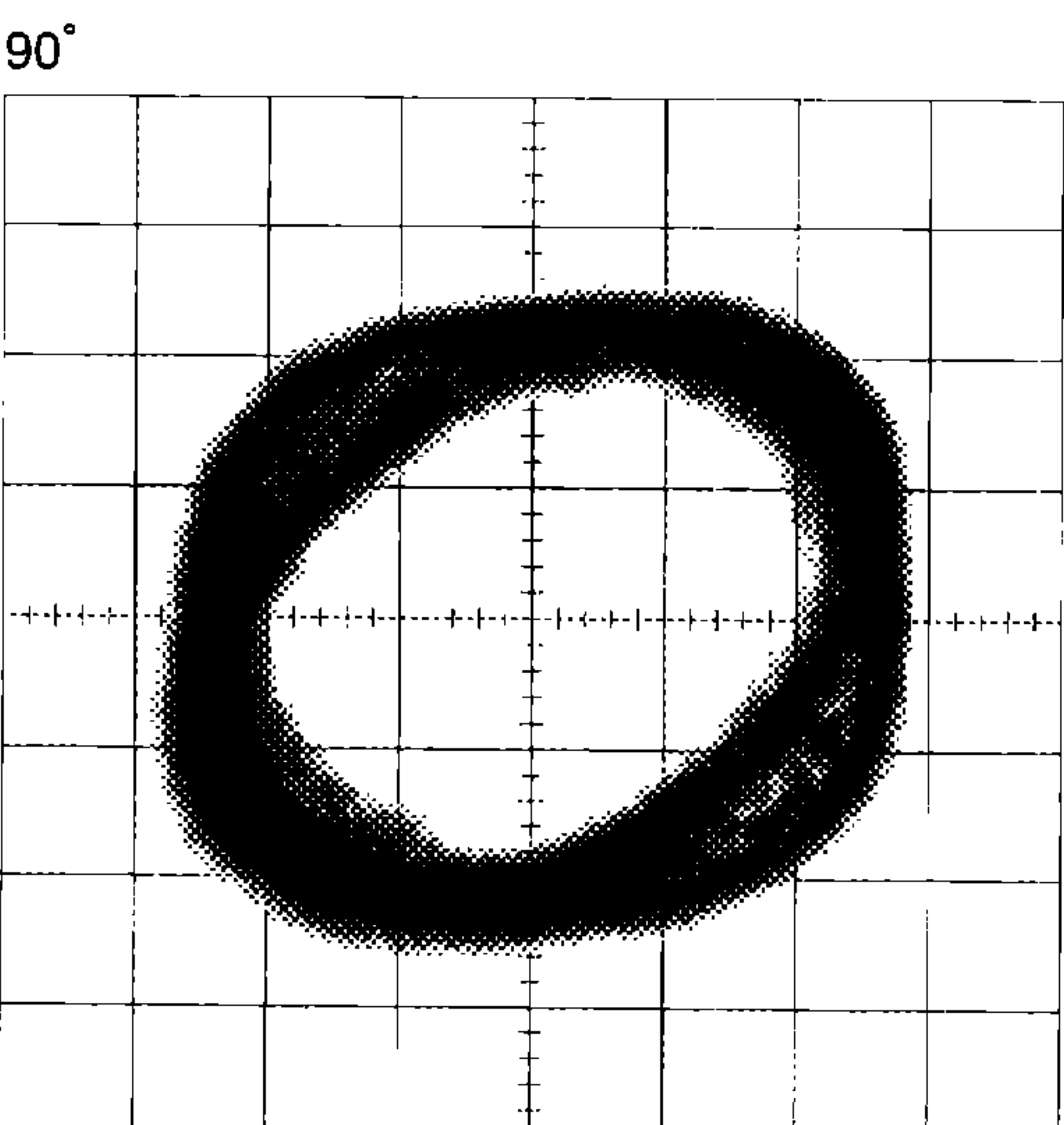
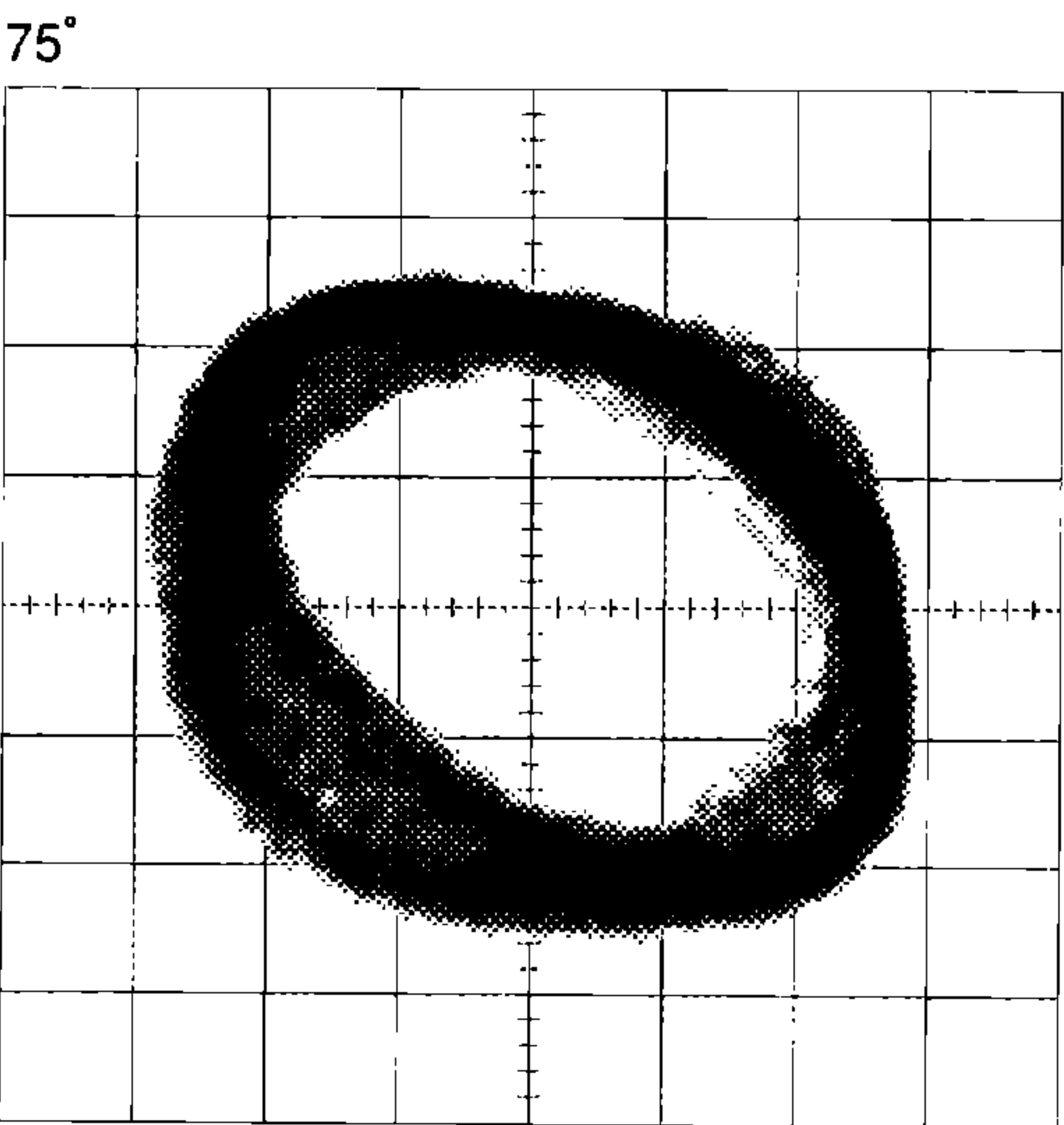
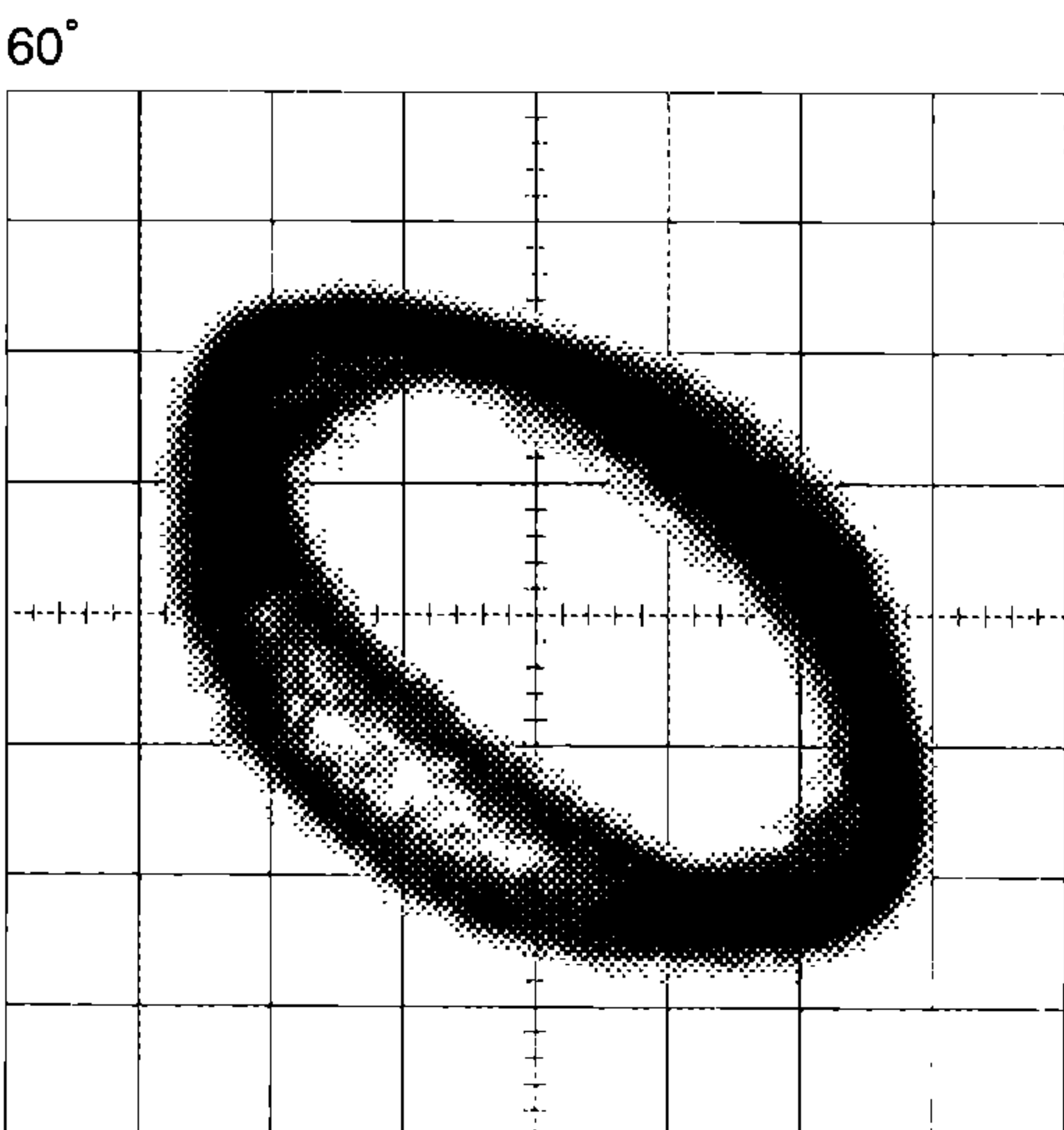
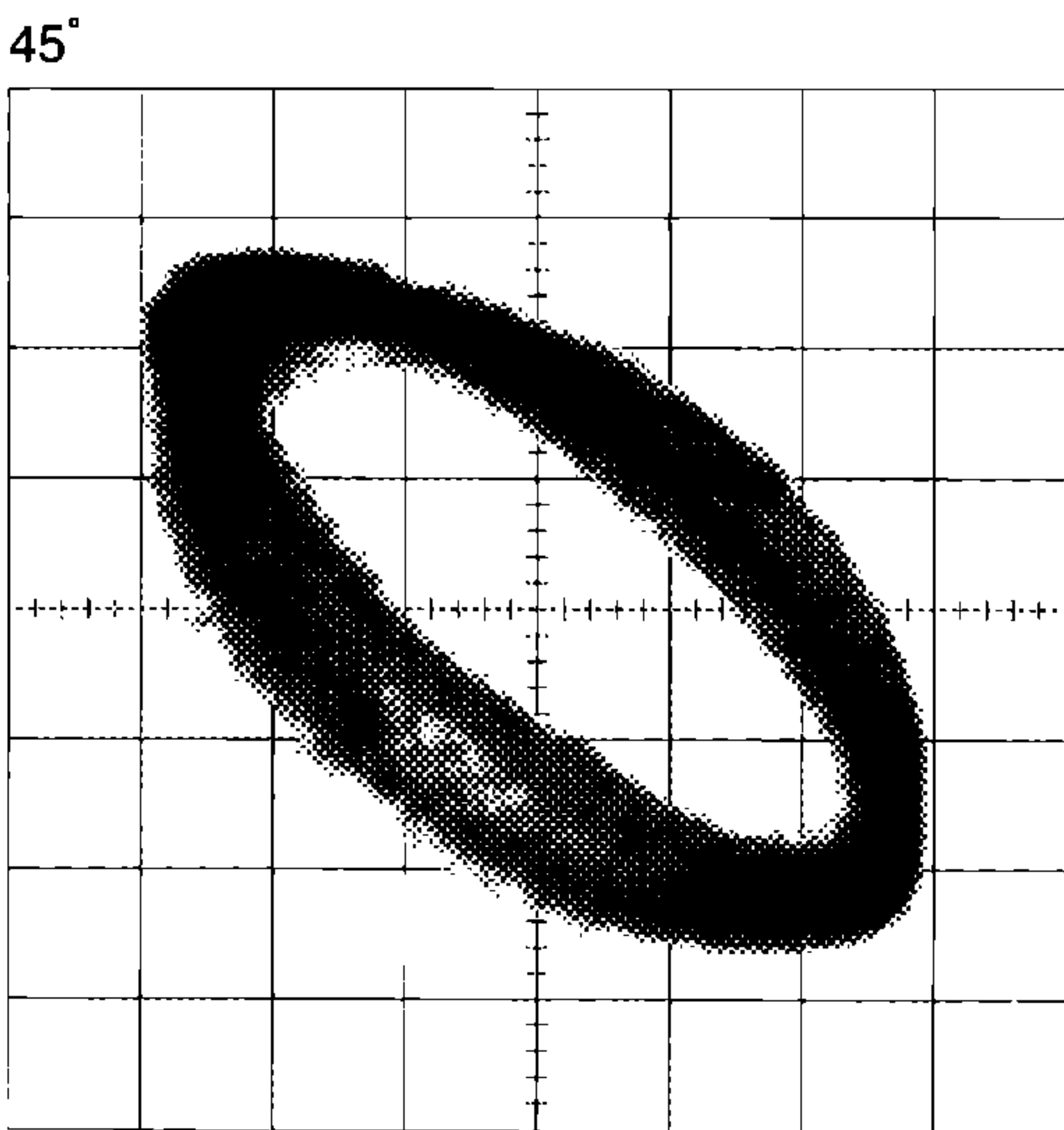
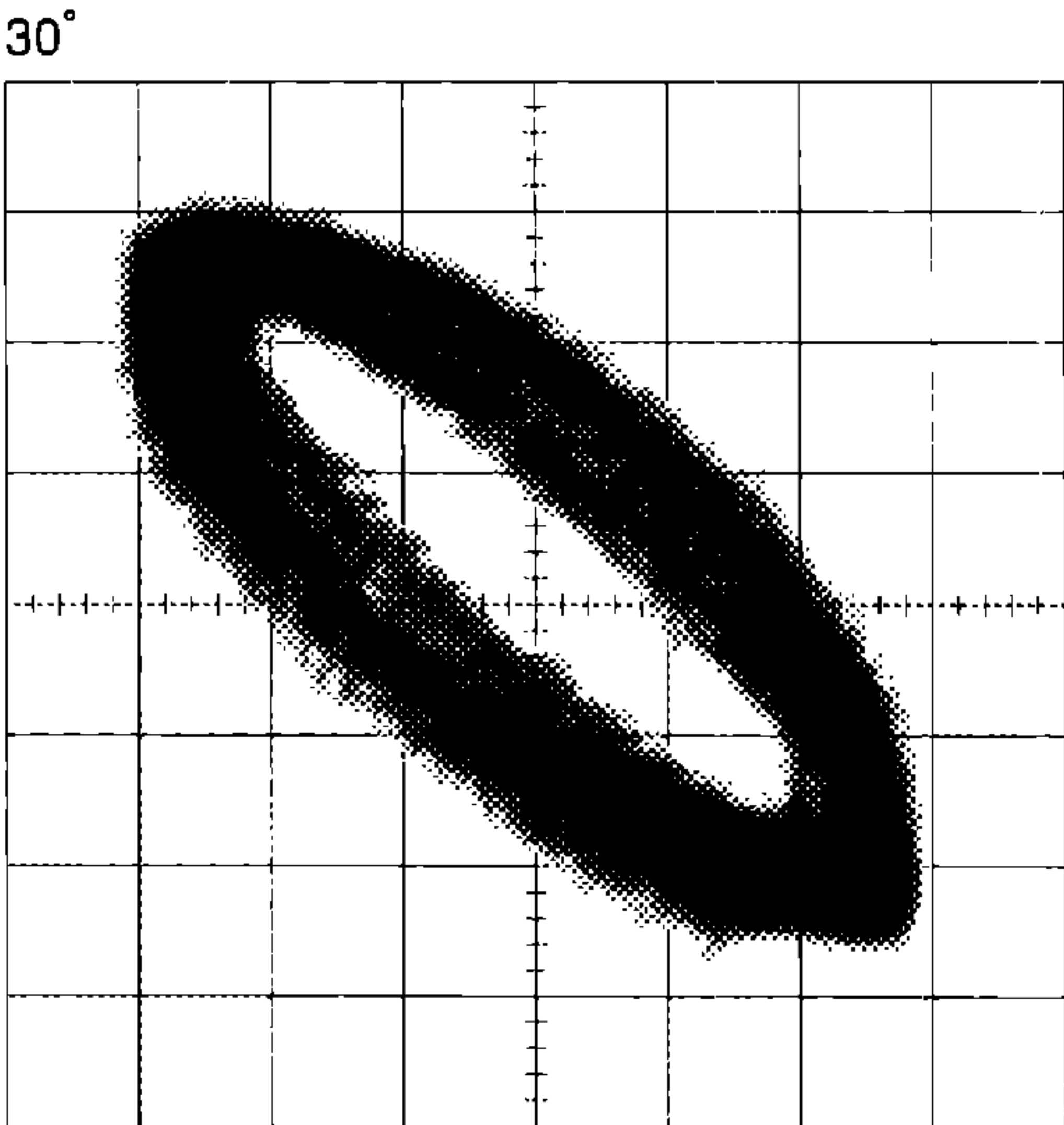
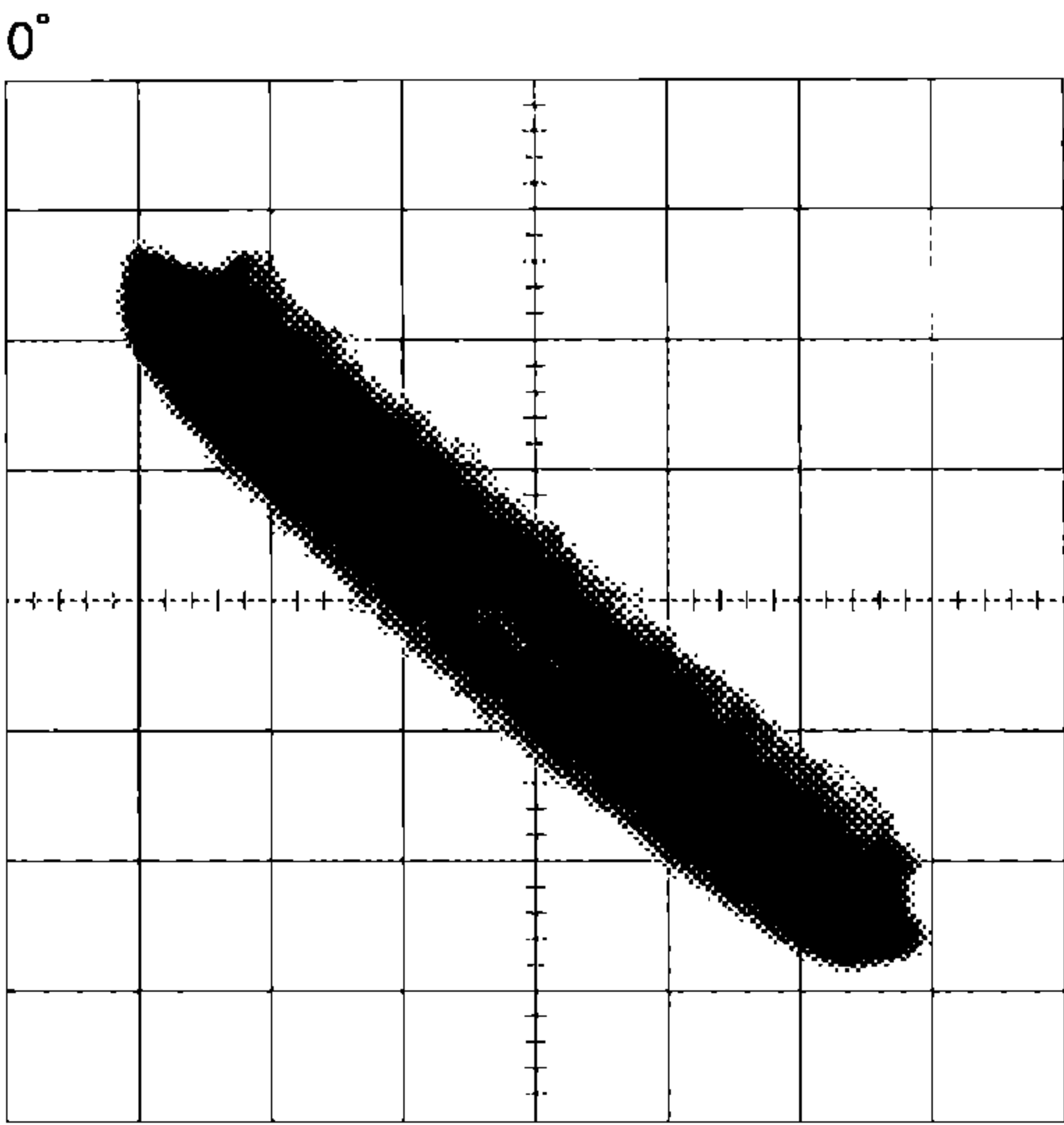
· **Hint**

Reloading the disc changes the clamp position and may decrease the "wobble".



Grating waveform

Ech → Xch 20mV/div, AC  
Fch → Ych 20mV/div, AC



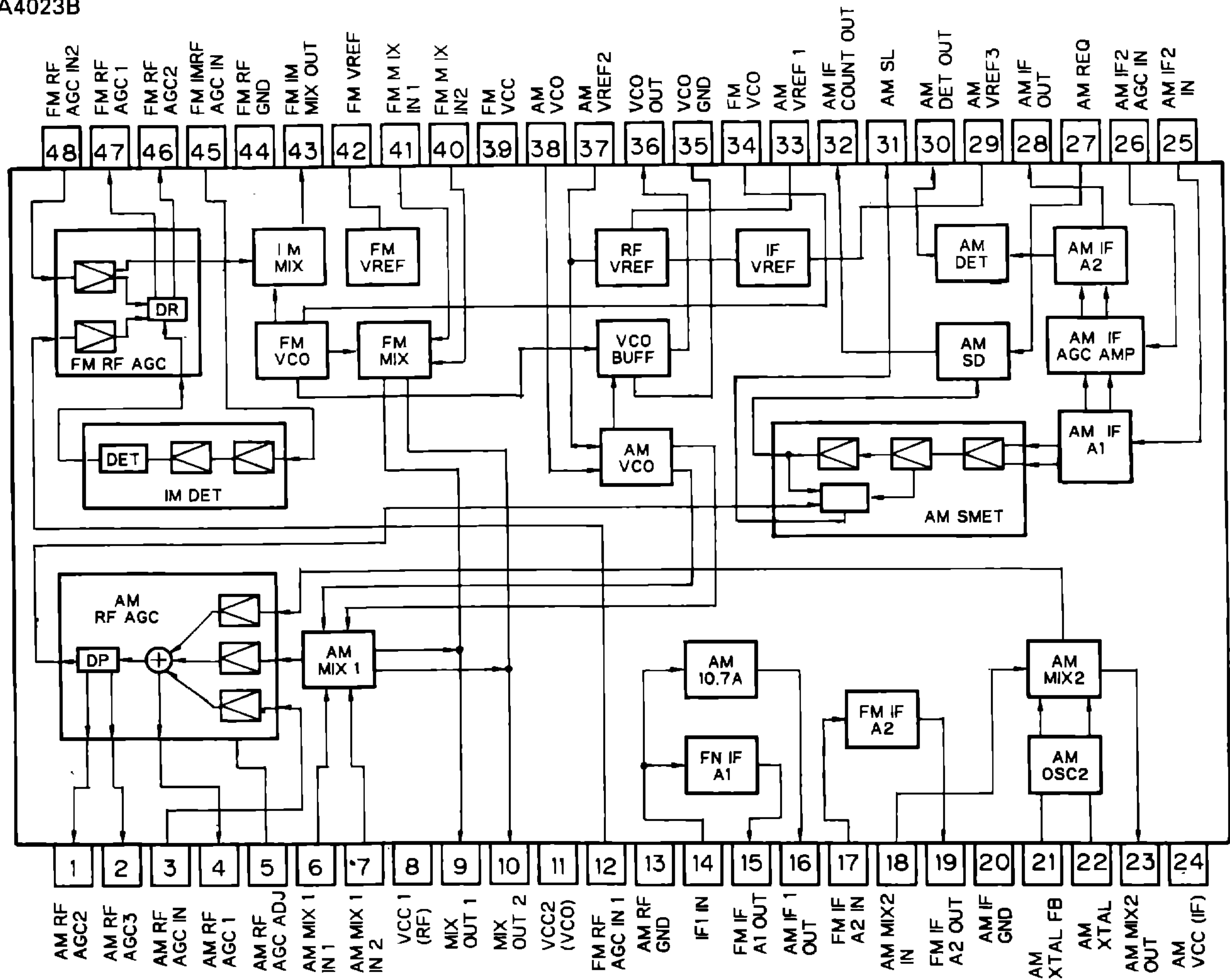


7. GENERAL INFORMATION

7.1 PARTS

7.1.1 IC

PA4023B



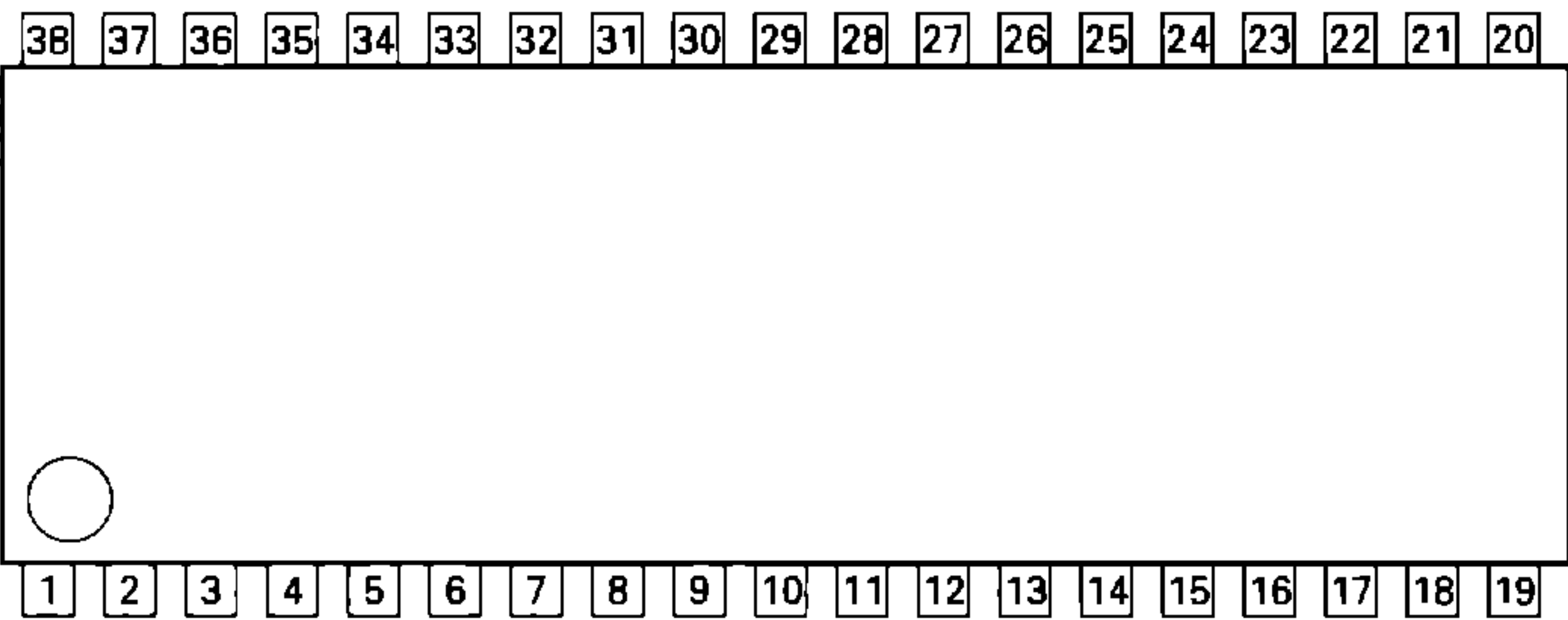
● Pin Functions (UPC2572GS)

Pin No.	Pin Name	I/O	Function and Operation
1	EFM-IN	I	EFM comparator input
2	AGC-OUT	O	AGC amplifier output
3	C. AGC		Connects AGC peak detection condenser
4	RF-IN	I	RF signal DC component cut input
5	RF-OUT	O	RF amplifier output
6	RF-	I	RF amplifier inverted input
7	C1, 3T		Connects RF3T component detection condenser
8	C2, 3T		Connects RF3T component detection condenser
9	Vcc		Power supply
10	A	I	A signal input
11	C	I	C signal input
12	B	I	B signal input
13	D	I	D signal input
14	F	I	F signal input
15	E	I	E signal input
16	PD	I	APC amplifier input
17	LD	O	APC amplifier output
18	LDON	I	Laser diode ON/OFF input



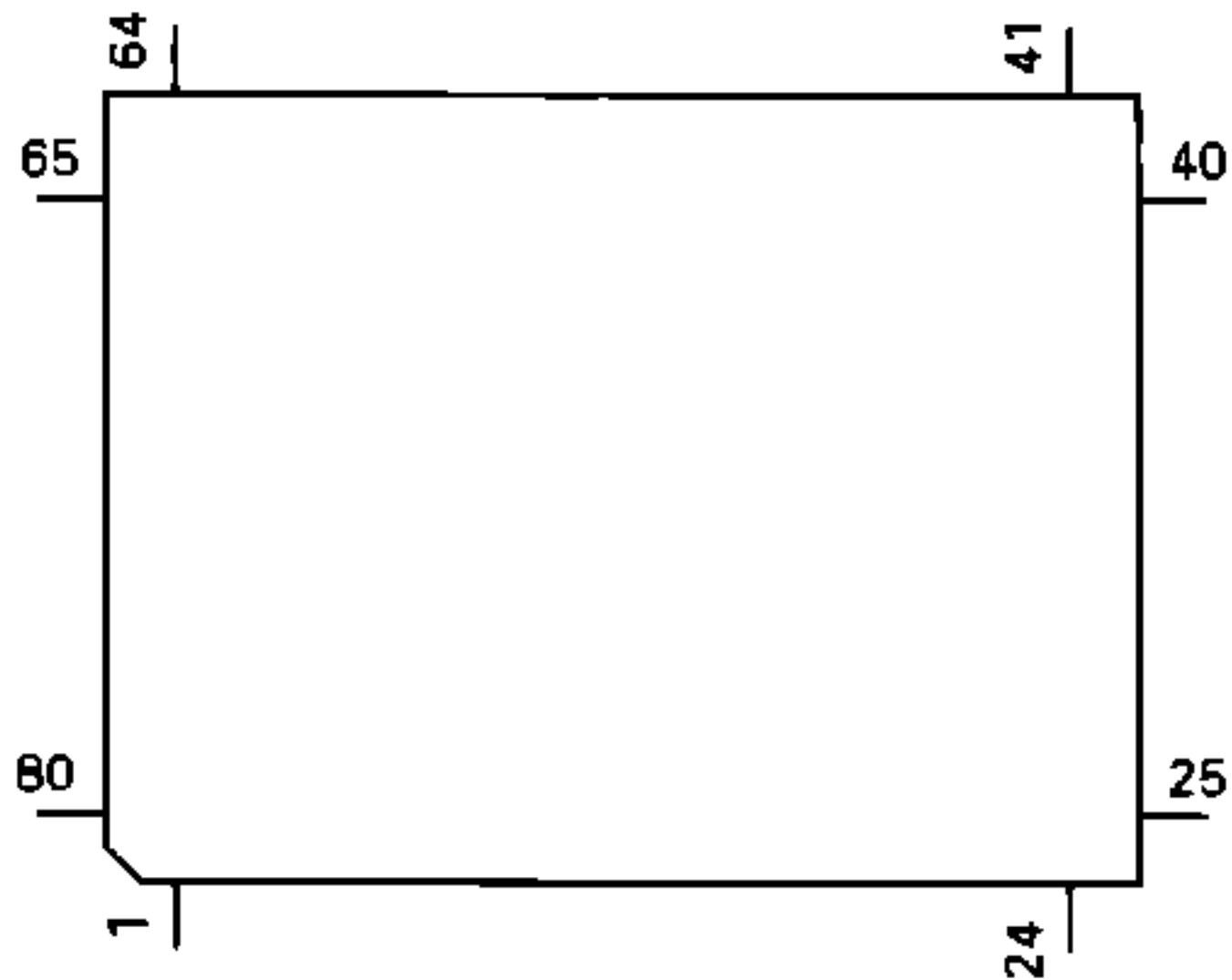
Pin No.	Pin Name	I/O	Function and Operation
19	VREF-OUT	O	Reference voltage output
20	VREF-IN	I	Reference voltage input
21	DET-OUT	O	Vibration detection circuit output
22	DET-IN	I	Vibration detection circuit input
23	TE-OUT2	O	Tracking error amplifier output (fourfold gain)
24	TE-OUT1	O	Tracking error amplifier output (singlefold gain)
25	TE-	I	Tracking error amplifier inverted input
26	GND		GND
27	FE-	I	Focus error amplifier inverted input
28	FE-OUT	O	Focus error amplifier output
29	C.FE	I	Focus error signal DC component cut input
30	3T-OUT	O	RF3T component output
31	MIRR	O	MIRR signal output
32	RFOK	O	RFOK signal output
33	DETECT	O	DETECT signal output
34	C. DEF		Connects DETECT signal detection condenser
35	EFM-OUT	O	EFM comparator output
36	ASY	I	EFM comparator level input
37	TE-BAL	I	Tracking balance control
38	FE-BAL	I	Focus balance control

UPC2572GS



IC's marked by\* are MOS type.  
Be careful in handling them because they are very liable to be damaged by electrostatic induction.

\*UPD63702GF



● Pin Functions (UPD63702GF)

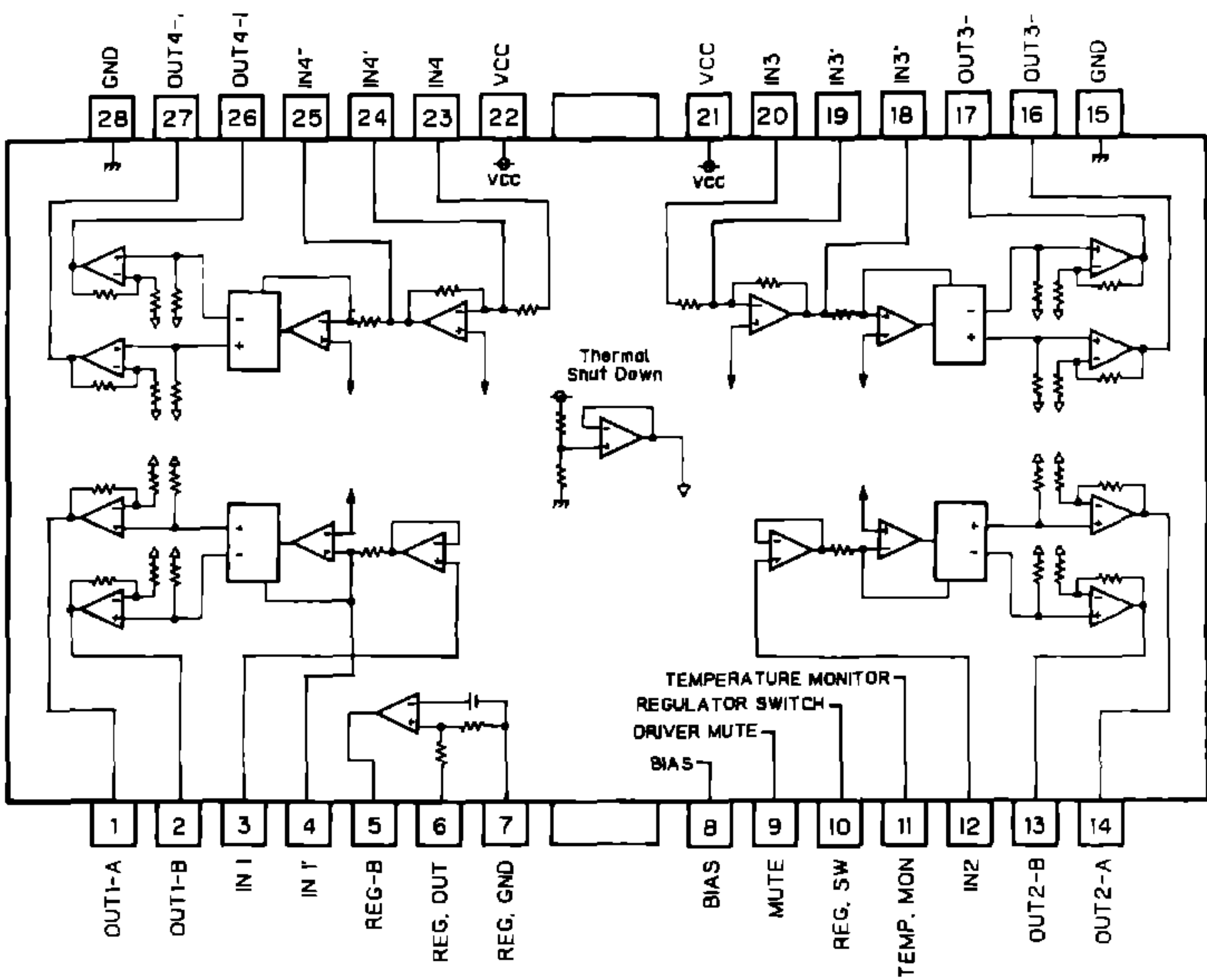
Pin No.	Pin Name	I/O	Function and Operation
1	D.VDD		Supplies current of positive voltage to the logic circuits
2	RST	I	System reset input pin
3	AO	I	Microcomputer interface AO="L": STB active and set to address register AO="H": STB active and set to parameter
4	STB	I	Signal to latch serial data within the LSI
5	SCK	I	Clock input pin to input and output serial data
6	SO	O	Outputs serial data and status signal
7	SI	I	Serial data input pin
8	D.GND		Logic circuit GND
9	X.GND		Crystal oscillation circuit GND
10	XTAL	I	Crystal oscillator connection pin
11	XTAL	O	Crystal oscillator connection pin
12	X.VDD		Supplies current of positive voltage to the crystal oscillation circuit
13	DA.VDD		Supplies current of positive voltage to the D/A converter
14	R+	O	Right channel analog audio data output pin
15	R-	O	Right channel analog audio data output pin
16,17	DA.GND		D/A converter GND
18	L-	O	Left channel analog audio data output pin
19	L+	O	Left channel analog audio data output pin
20	DA.VDD		Supplies current of positive voltage to the D/A converter
21	D.VDD		Supplies current of positive voltage to logic circuit



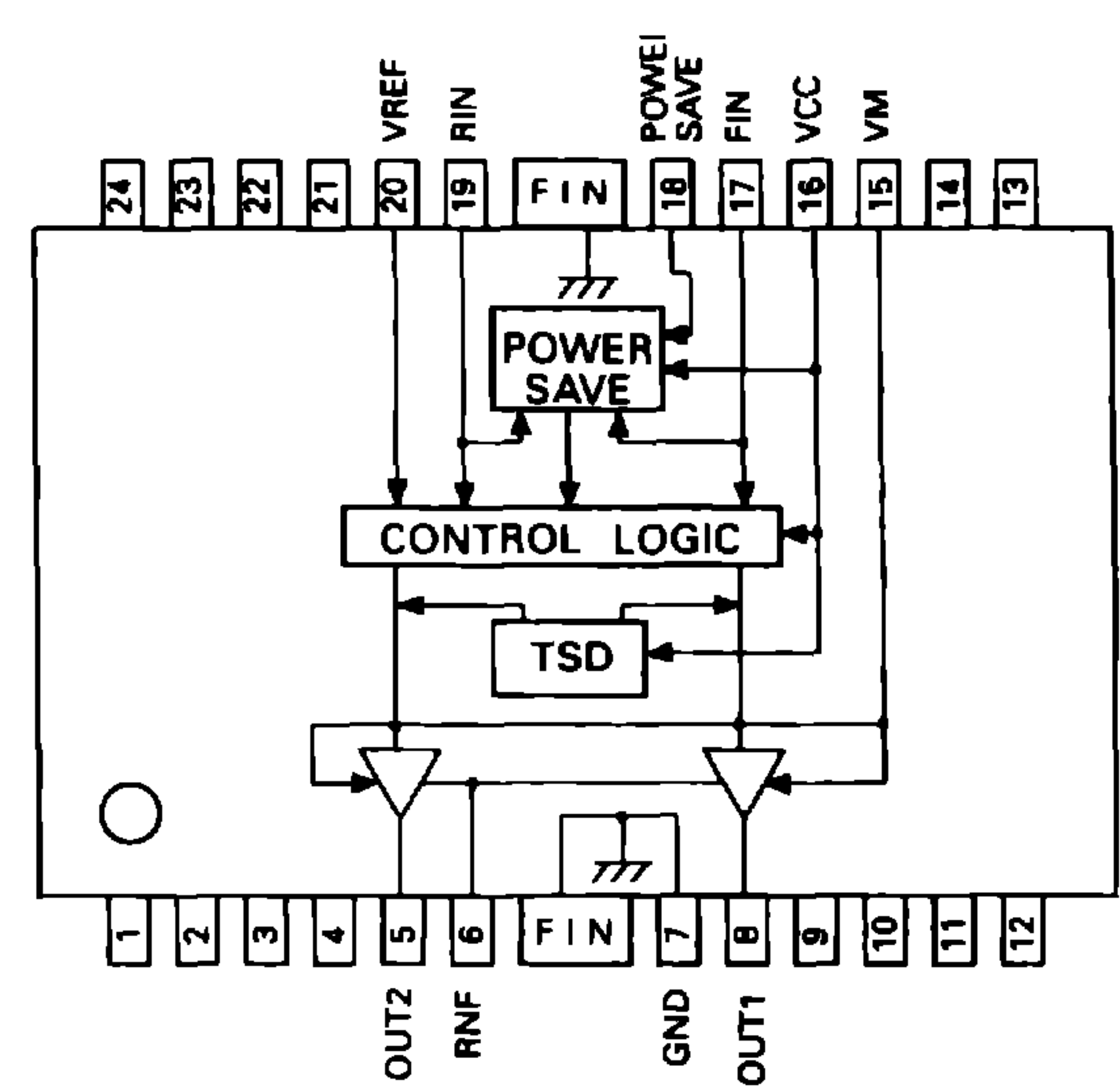
Pin No.	Pin Name	I/O	Function and Operation
22	FLAG	O	Flag output pin to indicate that audio data currently being output consists of noncorrectable data
23	WDCK	O	Pin to output double the frequency of LRCK
24	C16M	O	Pin to output the clock
25	EMPH	O	Output pin for the pre-emphasis data in the sub-Q code
26	DIN	I	Input pin for serial audio data
27	DOUT	O	Output pin for the serial audio data
28	SCKO	O	Output pin for the clock for the serial audio data
29	LRCK	O	Signals to distinguish the right and left channels of the audio data output from DOUT. Frequency is 44.1kHz at 50% duty at normal regeneration
30	TX	O	Output pin for the digital audio interface data
31	CTLV	I	Oscillation control pin for high-frequency clock generation VCO used for the digital PLL upon regeneration at fast speed of 2- or 4-fold
32	POUT	O	Output point for phase comparison
33	D.GND		GND for the logic circuit
34	VCO	I	Input pin for the inverter
35	$\overline{\text{VCO}}$	O	Output pin for the inverter
36	D.VDD		Supplies current of positive voltage to the logic circuit
37	PLCK	O	Pin for monitoring the bit clock
38	LOCK	O	Indicates "H" when the synchronized pattern detection signal matches the frame counter output at the EFM recovery modulation, and "L" when they don't match
39	WFCK	O	Minute-cycle signal for the bit clock, the signal indicates the cycle of 1 frame (approx. 7.35kHz)
40	RFCK	O	Minute-cycle signal for the clock, the signal indicates cycle of 1 frame (approx. 7.35kHz)
41	D.GND		GND for the logic circuit
42,43	TEST0,1	I	Test pins
44,45	TM2, TM4	I	Pins for controlling regeneration at fast speed of 2- or 4-fold
46-49	T4-T7	I	Test pins
50,51	C1D1, C1D2	O	Output pin for indicating the C1 error correction results
52-54	C2D1-C2D3	O	Output pin for indicating the C2 error correction results
55	D.VDD		Supplies current of positive voltage to the logic circuit
56	SFSY	O	Outputs 1 word of the subcode. Generally, 1 cycle is approx 136 micro seconds
57	SBSY	O	The signal indicates the beginning of the subcode block. The SFSY signal is output at high level every 98 times
58	SBSO	O	Output pin for the subcode data
59	SBCK	I	Input pin for the clock signal for read-out of the subcode data
60	A.GND		GND for the analog circuit
61	MD	O	Output pin for the spindle drive
62	SD	O	Output pin for the sled drive
63	TD	O	Output pin for the tracking drive
64	FD	O	Output pin for the focus drive
65	FBAL	O	Output pin for the focus balance control
66	TBAL	O	Output pin for the tracking balance control
67	A.VDD		Supplies current of positive voltage to the analog circuit
68	TBC	I	Switches coefficient banks for the tracking filter
69	EFM	I	Input pin for the EFM signal
70	HOLD	I	Input pin for the hold control signal
71	RFOK	I	Input pin for the RFOK signal
72	MIRR	I	Input pin for the MIRR signal
73	A.GND		GND for the analog circuit
74	HOME	I	Home position detector input
75	VR1	I	The signal input through these pins is digitized to 8-bit by the A/D converter, which by operation of the assigned register, can be read into the microcomputer
76	FE	I	Inputs a focus-error signal from the RF amplifier
77	TE	I	Inputs a tracking-error signal from the RF amplifier
78	TEC	I	Input pin for the tracking comparator
79	REFOUT	O	Output point for midpoint potential for the A/D converter for the LSI portion
80	A.VDD		Supplies current of accurate voltage to the analog circuit



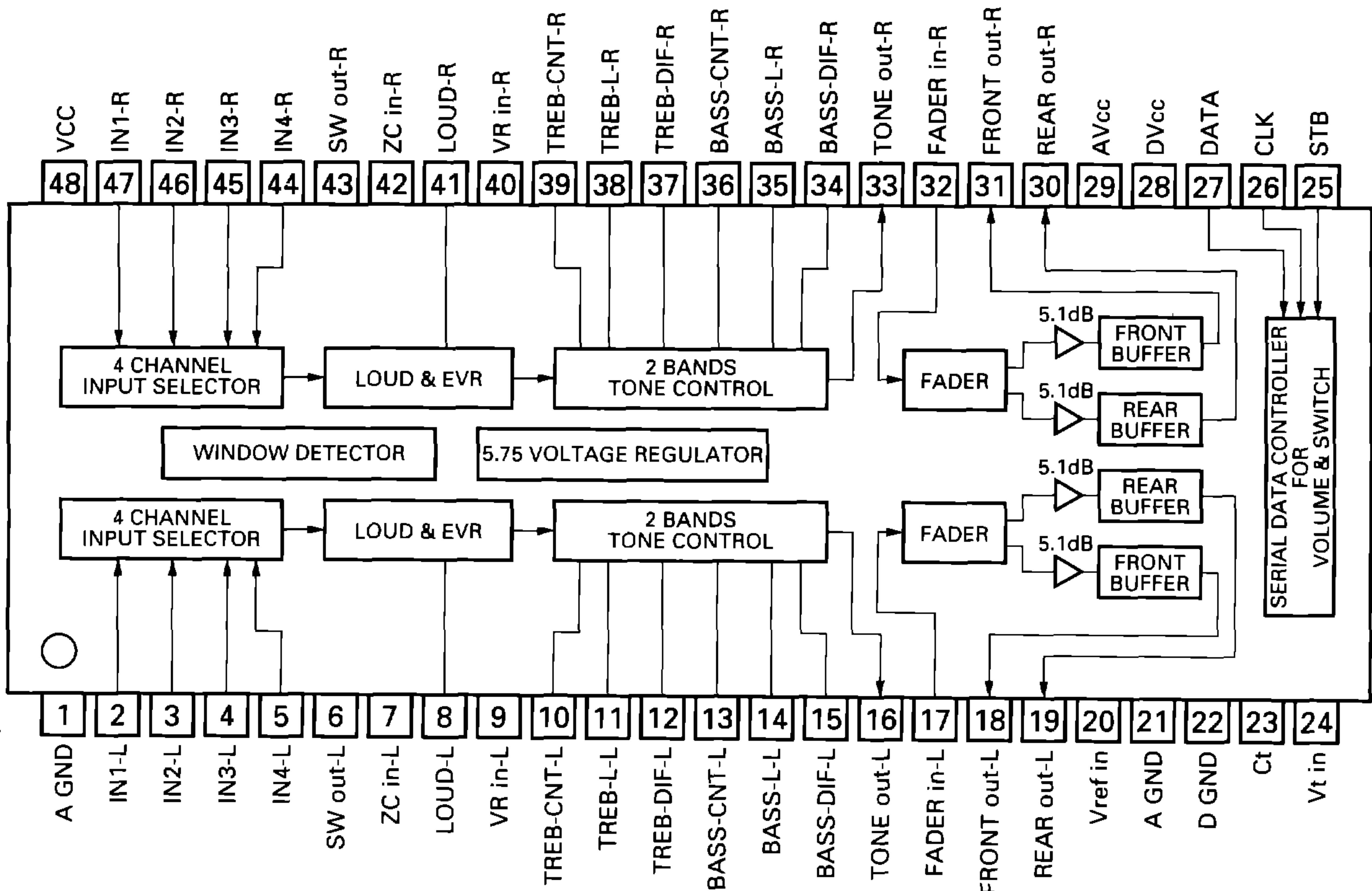
XLA6997FP



XLA6285FP

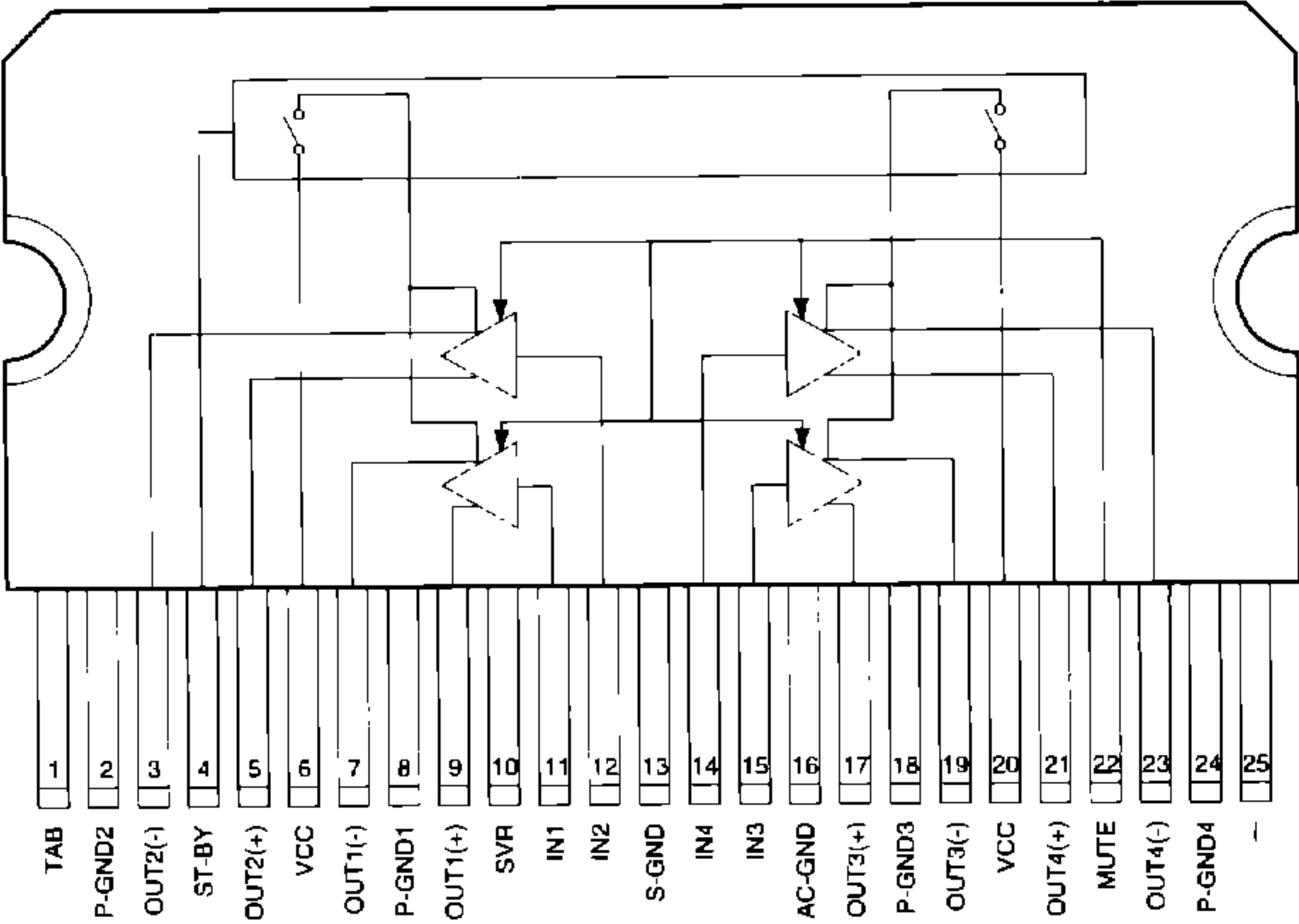


\*SN761027DL

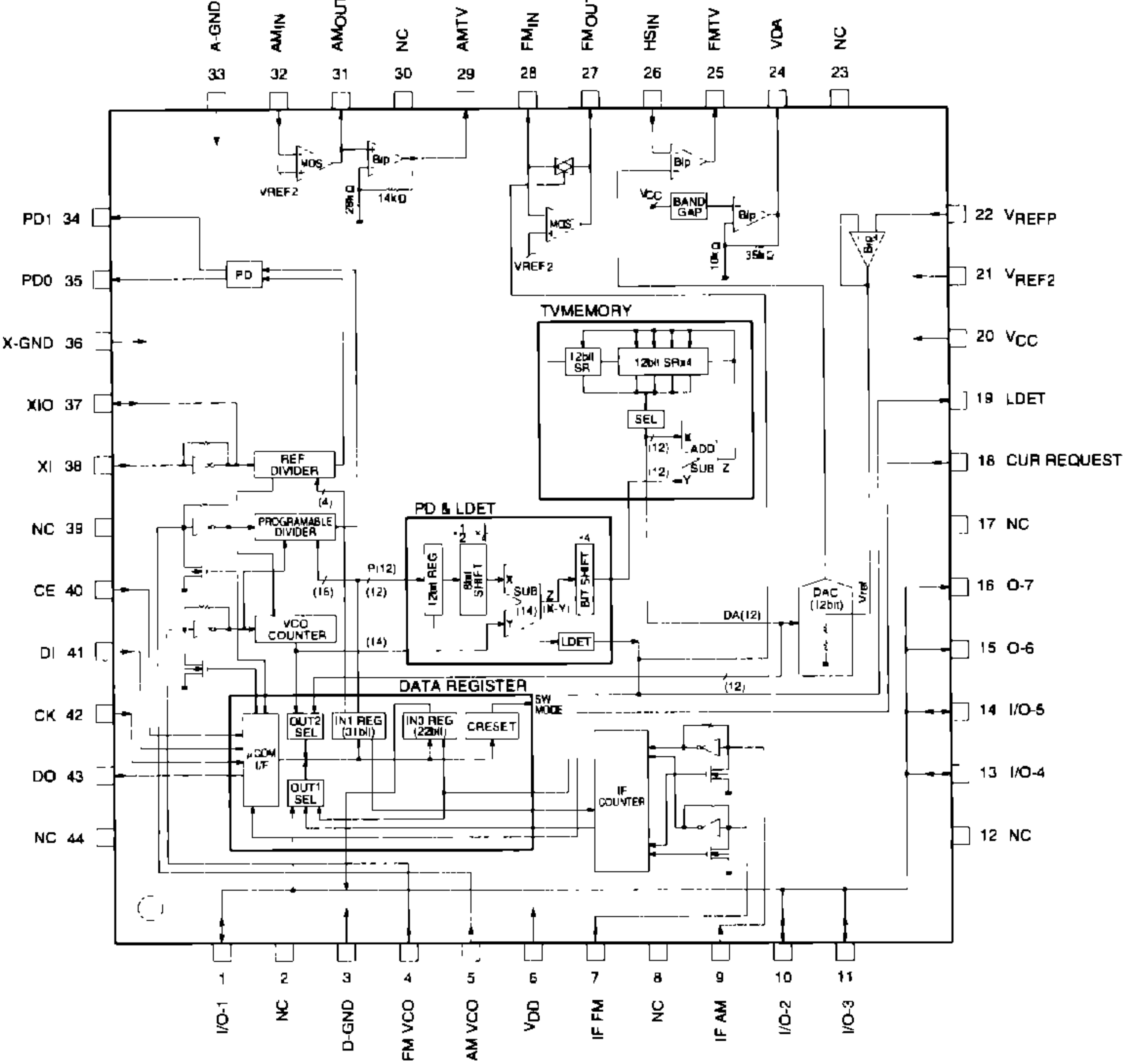




TDA7386



PM2005B



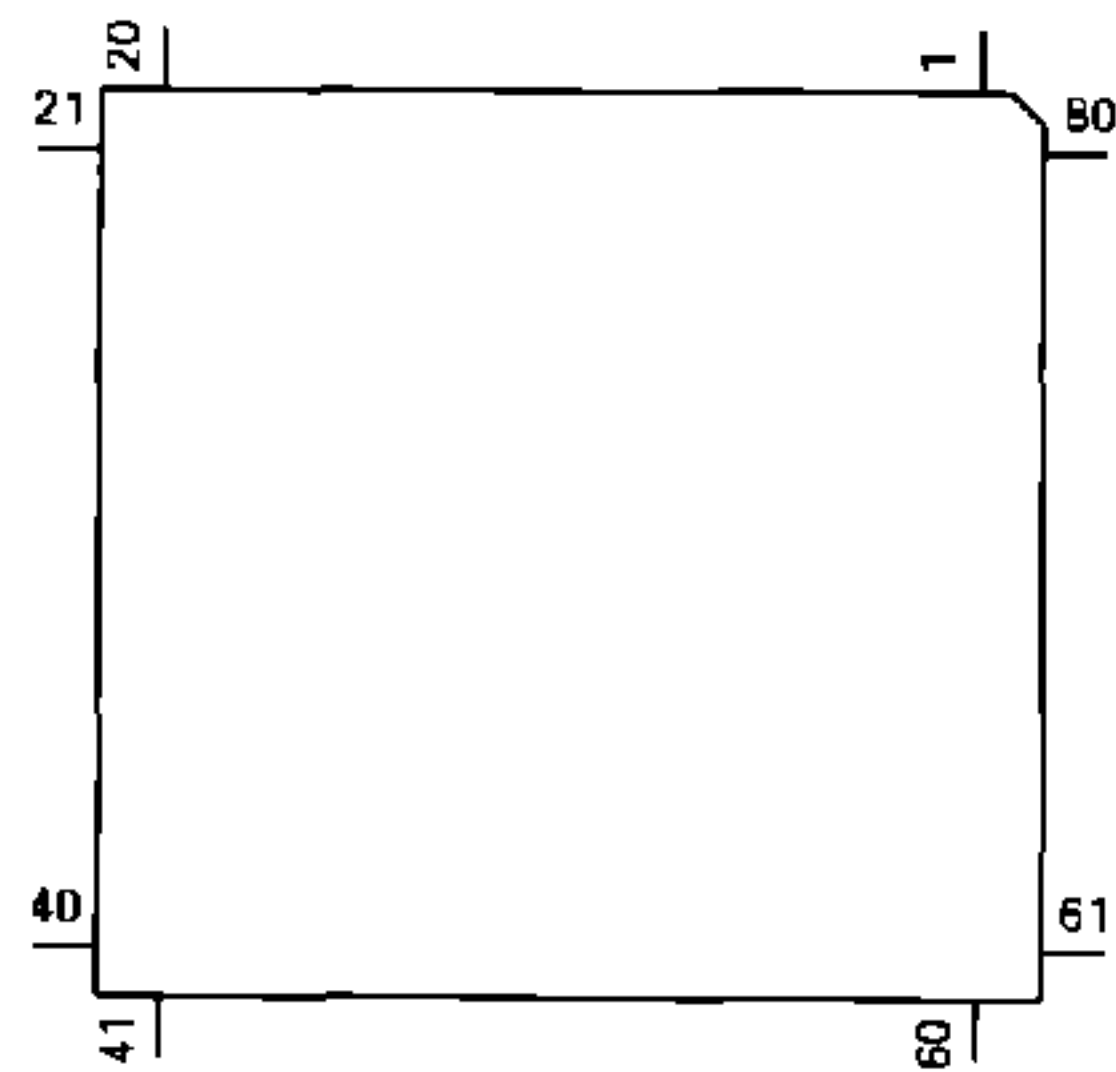
● Pin Functions (PD4721B)

Pin No.	Pin Name	I/O	Format	Function and Operation
1	DSCSNS	I		Disc insertion detection input
2	ST	I		Stereo input
3	ISENS	I		Illumination sensor input
4	AVSS			Connect to GND.
5	VCAOUT	O		Analog output for SUBW electronic volume control
6	SD	I		SD signal input
7	AVREF1			Connect to VDD.
8	KYDT	I		Grille microprocessor communications data input
9	DPDT	O	C	Grille microprocessor communications data output
10	SWVDD	O	C	Grille power output
11	RIDDI	I		RDS/ID logic communications data input
12	RIDDO	O	C	RDS/ID logic communications data output
13	RIDCK	O	C	RDS/ID logic communications clock output
14	RIDRST	O	C	RDS/ID logic reset output
15	RIDSEL	O	C	RDS/ID logic select output
16	XSI	I		Serial data input to CD LSI
17	XSO	O	C	Serial data output to CD LSI
18	XSCK	O	C	Serial clock output to CD LSI
19	XSTB	O	C	CD LSI strobe output
20	CD5VON	O	C	CD (5 V) power control output
21	XAO	O	C	CD LSI command/data control output
22	XRST	O	C	CD LSI reset control output
23	CONT	O	C	Servo driver power control output
24	VDCONT	O	C	VD power control output
25	DIMMER	O	C	Dimmer control output
26	CDEJET	O	C	Load Motor Eject control output
27	CDLOAD	O	C	Load Motor Load control output
28	LOCK	I		Spindle lock detection input
29	FOK	I		Focus OK input
30	DRELAY	O	C	Output for external relay



Pin No.	Pin Name	I/O	Format	Function and Operation
31	DRSENS	I		Door open/closed sensor input
32	DRSYS	O	C	Door system change output
33	VSS			(GND)
34	CLAMP	I		Disc clamp
35	FIEOUT	O	C	FIE ON/OFF control output
36	SUBW0	O	N	Subwoofer cutoff frequency selection output 0
37	SUBW1	O	N	Subwoofer cutoff frequency selection output 1
38	TMUTE	O	N	Tuner mute output
39	DLED	O	N	LED output for alarm
40	MIRR	I		Mirror surface detection input
41	VST	O	C	Electronic VOL strobe output
42	VCK	O	C	Electronic VOL clock output
43	VDT	O	C	Electronic VOL data output
44	ILMPW	O	C	Illumination power output
45	PEE	O	C	PEE ON oscillation output
46	MUTE	O	C	General mute output
47	SYSPW	O	C	System power output
48	TUNPCK	O	C	PLL IC clock
49	TUNPDO	O	C	PLL IC data output
50	TUNPCE	O	C	PLL IC chip enable
51	TUNPDI	I		PLL IC data input
52	MODEL2	I		Destination selection 2
53	LCDPW	O	C	LCD backlight power output
54	FM	O	C	FM output
55	AM	O	C	AM output
56	SUBWMUTE	O	C	Subwoofer mute output
57	DLSENS	I		Centralized door lock release sensor input
58	STOUT	O	C	Output for starter motor cutoff
59	TUNANT	O	C	Tuner power output
60	RESET			Reset
61	RIDRDY	I		RDS/ID logic ready input
62	BSENS	I		Backup input
63	ASENS	I		ACC sensor input
64	DSENS	I		Detachment sensor input
65	MOSENS	I		Motion/window damage sensor input
66	CLKIN	I	C	8 Hz clock input for clock
67	CDPW	O	C	CD power control output
68	VDD			VDD
69	X2			Oscillator output
70	X1			Oscillator input
71	IC			Connect to GND.
72	XT2			Subclock terminal
73	TESTIN	I		Test mode
74	AVDD			Analog power supply of A/D convertor
75	AVREF0			Reference voltage input of A/D convertor
76	SL	I		Signal level input
77	MODEL1	I		Destination identification 1
78	VDSENS	I		VD power top/ground fault sensor input
79	TEMP	I		Temperature sensor input
80	EJTSNS	I		Disc Eject position detection input

\*PD4721B



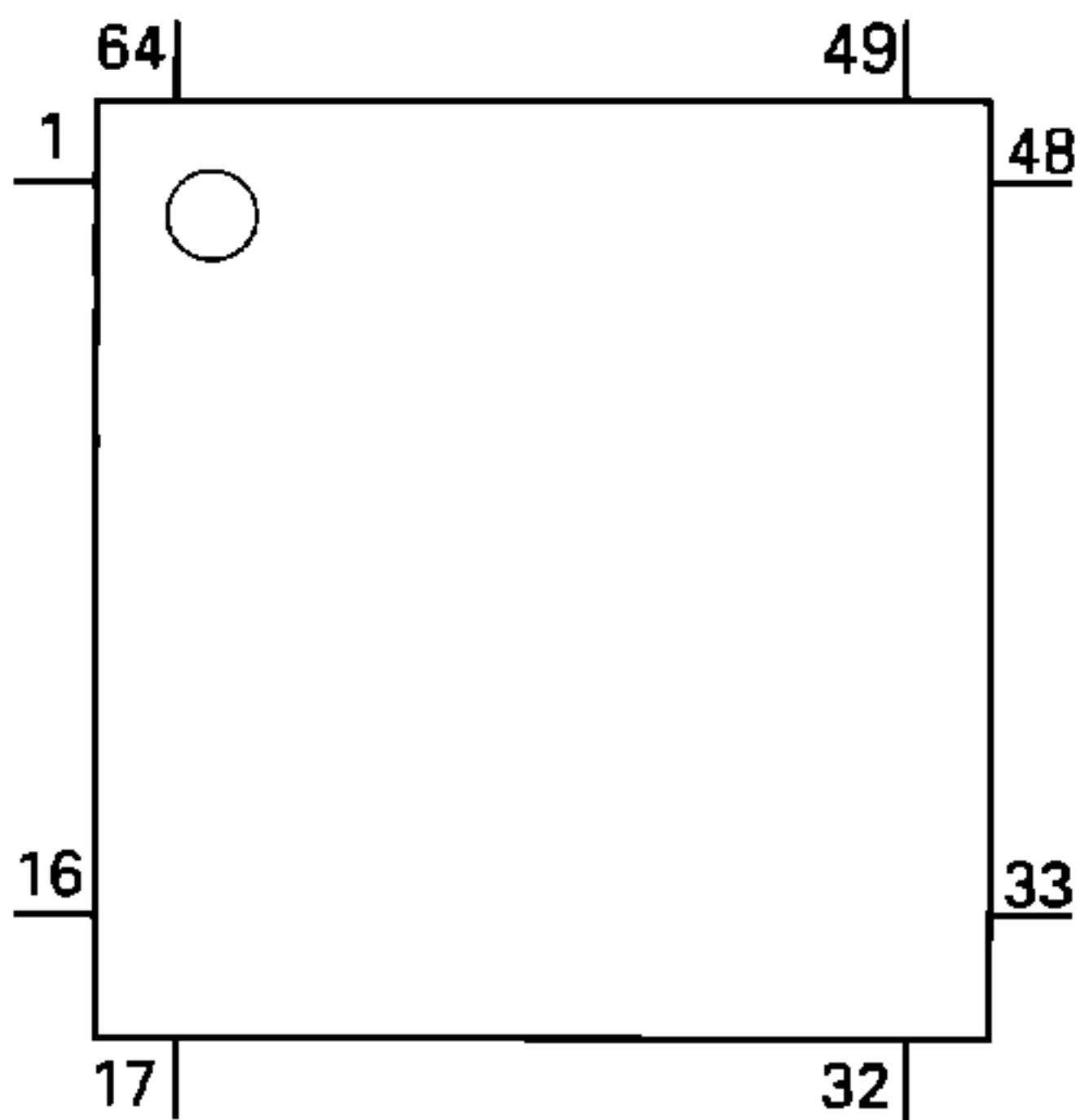
Format	Meaning
C	C MOS
N	N channel open drain



● Pin Functions (PD6196A)

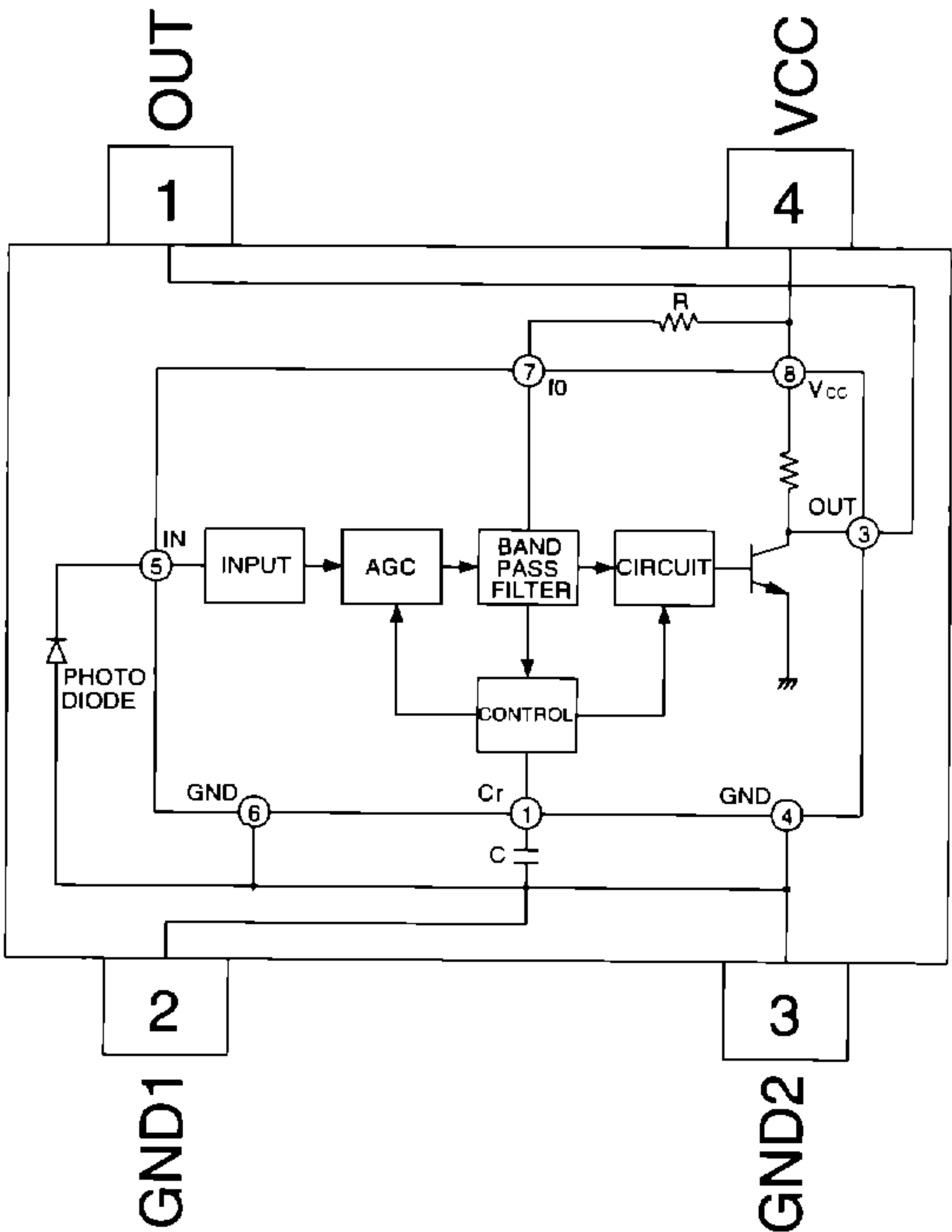
Pin No.	Pin Name	I/O	Format	Function and Operation
1-5	SEG4-0	O		LCD segment output
6-9	COM3-0	O		LCD common output
10	V3			LCD driver power supply
11-14	KS4-1	O	N	Key strobe output
15,16	KD1,2	I		Key data input
17	REM	I		Remote-control input
18	SI	I		UART input
19	RST	I		System reset input
20	SO	O	C	UART output
21	MODA	I		Connect to VSS
22,23	X0,1			Connect to oscillator
24	VSS			GND
25,26	KD3,4	I		Key data input
27,28	KS6,5	O	N	Key strobe output
29-55	SEG39-13	O		LCD segment output
56	VCC	O		Power supply
57-64	SEG12-5	O		LCD segment output

\*PD6196A



Format	Meaning
C	C MOS
N	N channel open drain

RS-140

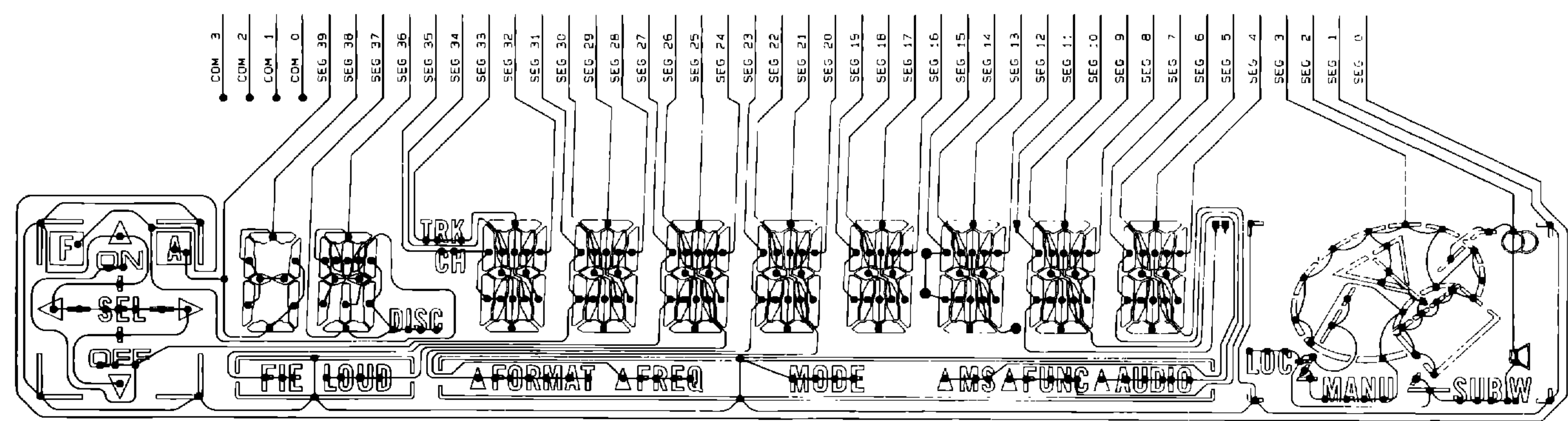




7.1.2 DISPLAY

● CAW1393

SEGMENT



COMMON

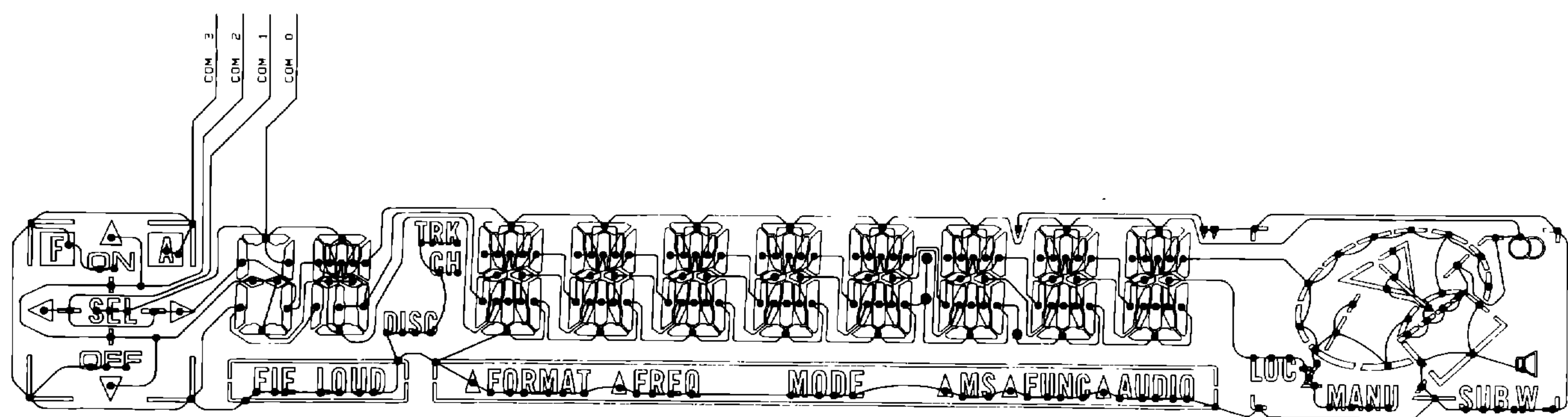


Fig. 24



## 7.2 DIAGNOSIS

### 7.2.1 DISASSEMBLY

#### ● Removing the Case(Not shown)

1. Remove the two screws.
2. Insert and turn a flat screwdriver at locations indicated by arrows to remove the case.

#### ● Removing the Detach Grille Assy(Fig.25)

1. Press the detach button, and then pull Detach Grille Assy.

#### ● Removing the Panel Assy(Fig.25)

1. Disconnect the two stoppers indicated by arrows, and then remove the Panel Assy.

#### ● Removing the CD Mechanism Module(Fig.25)

1. Remove the four screws.
2. Disconnect the connector.
3. Remove the CD Mechanism Module.

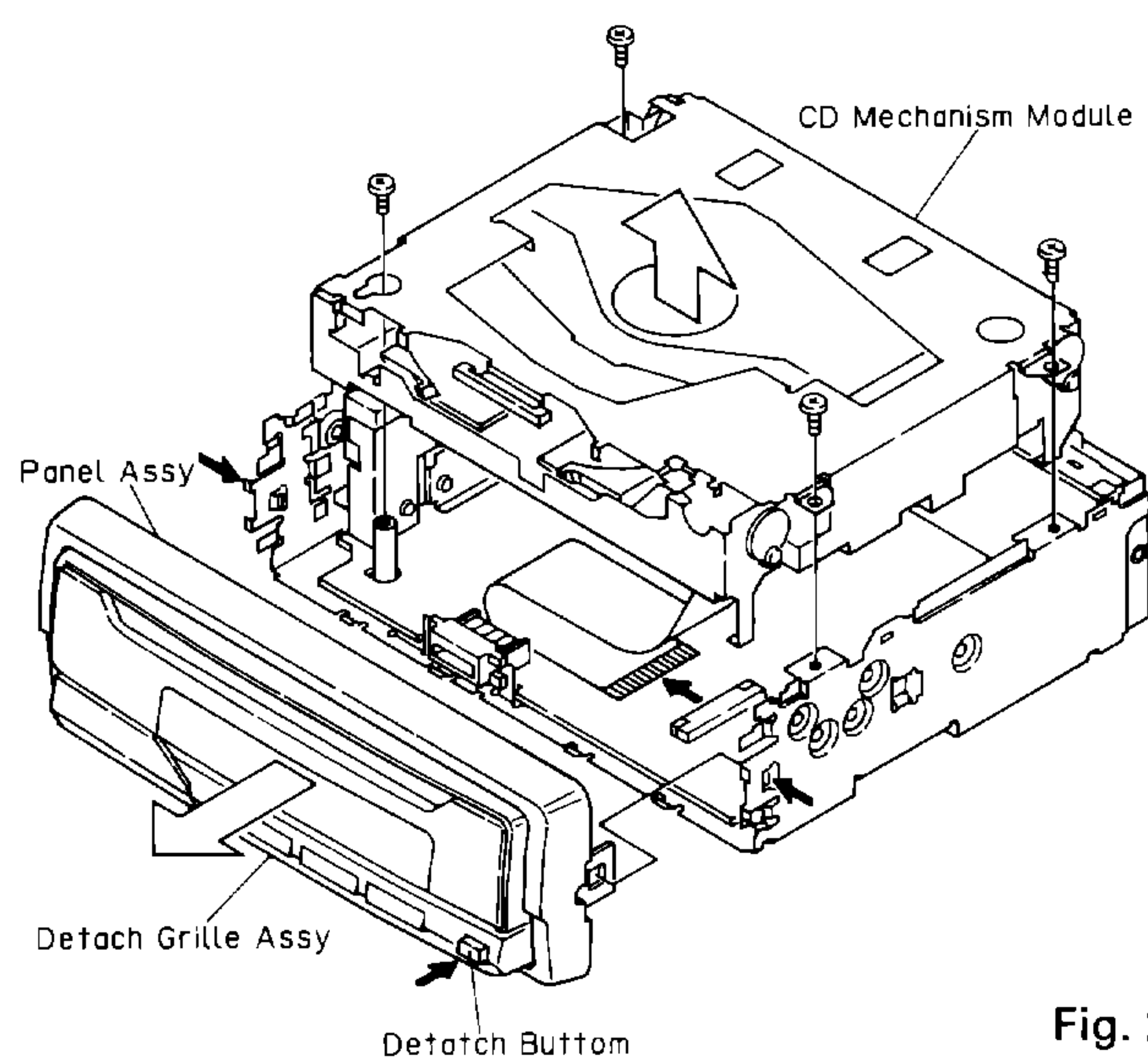


Fig. 25

#### ● Removing the Chassis Unit(Fig.26)

1. Remove the two screws A, two screws B, screw C and screw D.
2. Stretch the three claws, and then remove the Chassis Unit.

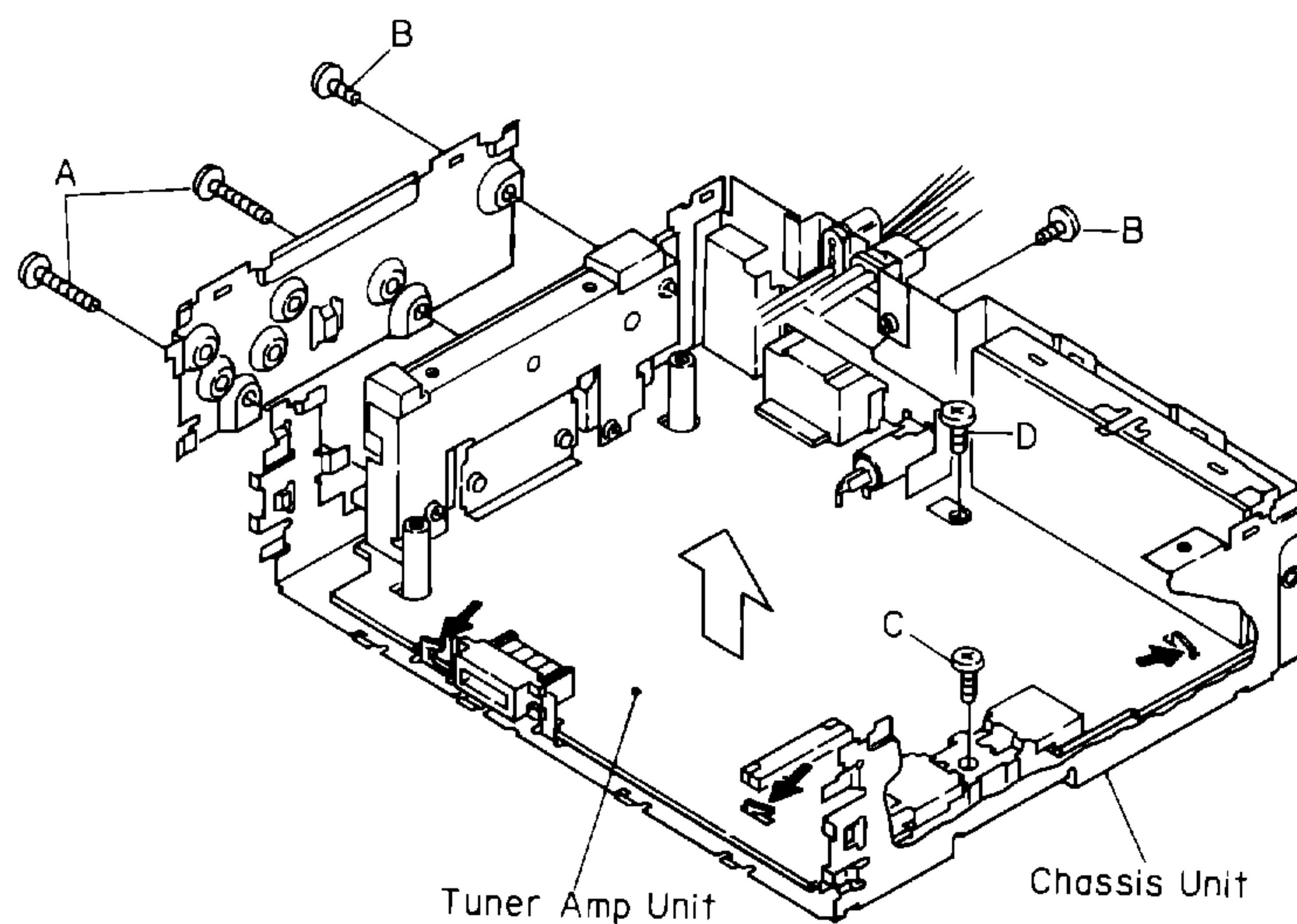


Fig. 26



## 7.2.2 TEST MODE

### ● CD Test Mode

#### 1)Precautions

- This unit uses a single power supply (+5V) for the regulator. The signal reference potential, therefore, is connected to REFO(approx. 2.5V) instead of GND. If REFO and GND are connected to each other by mistake during adjustments, not only will it be impossible to measure the potential correctly, but the servo will malfunction and a severe shock will be applied to the pick-up. To avoid this, take special note of the following.  
Do not connect the negative probe of the measuring equipment to REFO and GND together. It is especially important not to connect the channel 1 negative probe of the oscilloscope to REFO with the channel 2 negative probe connected to GND.  
Since the frame of the measuring instrument is usually at the same potential as the negative probe, change the frame of the measuring instrument to floating status.  
If by accident REFO comes in contact with GND, immediately switch the regulator or power OFF.
- Always make sure the regulator is OFF when connecting and disconnecting the various filters and wiring required for measurements.
- Before proceeding to further adjustments and measurements after switching regulator ON, let the player run for about one minute to allow the circuits to stabilize.
- Since the protective systems in the unit's software are rendered inoperative in test mode, be very careful to avoid mechanical and /or electrical shocks to the system when making adjustment.
- Test mode starting procedure  
Switch ACC, back-up ON while pressing the **4** and **6** keys together.

- Test mode cancellation  
Switch ACC, back-up OFF.
- Disc detection during loading and eject operations is performed by means of a photo transistor in this unit. Consequently, if the inside of the unit is exposed to a strong light source when the outer casing is removed for repairs or adjustment, the following malfunctions may occur.  
\*During PLAY, even if the eject button is pressed, the disc will not be ejected and the unit will remain in the PLAY mode.  
\*The unit will not load a disc.  
When the unit malfunctions this way, either re-position the light source, move the unit or cover the photo transistor.
- When loading and unloading discs during adjustment procedures, always wait for the disc to be properly clamped or ejected before pressing another key. Otherwise, there is a risk of the actuator being destroyed.
- Turn power off when pressing the button → or the button ← key for focus search in the test mode. (Or else lens may stick and the actuator may be damaged.)
- SINGLE/4TRK/10TRK/32TRK will continue to operate even after the key is released. Tracking is closed the moment C-MOVE is released.
- JUMP MODE resets to SINGLE as soon as power is switched OFF.







● Error Number Indication

If the CD should fail to operate or if an error has taken place during operation the player will enter into the error mode, and the cause of the error will be numerically indicated.

This is aimed at assisting in analysis or repair.

(1) Basic Means of Display

•With ERROR indicated in "MODE" on IP-BUS Display data, an error code is transmitted by the use of MIN and SEC.

The MIN and SEC data will be identical.

•Examples of Display                      ERROR-XX

(2) Error Codes

Error Code	Classification	Description	Cause/Detail
10	ELECTRIC	Carriage home failure	Carriage doesn't move to or from the innermost position →Home switch failed and/or carriage immobile
11	ELECTRIC	Focus failure	Focus failed →Defects, disc upside-down, severe vibration
12	ELECTRIC	SETUP failure Subcode failure	Spindle failed to lock or subcode unreadable →Spindle defective, defect, severe vibration
14	ELECTRIC	Mirror failure	Unrecorded CD-R The disc is upside-down, defects, vibration
17	ELECTRIC	Set up failure	AGC protect failed →Defects, disc upside-down, severe vibration
19	ELECTRIC	Set up failure	Tracking error waveform is too unbalanced (>50%) or level is too small →The P.U.unit or tracking error circuitry is N.G.
30	ELECTRIC	Search time out	Failed to reach target address →Carriage/tracking defective and/or defects
A0	SYSTEM	Power failure	Power overvoltage or short circuit detected →Switching transistor defective and/or power abnormal

"defects" means scratches, dirt etc an the surface of the disc.

● New Test Mode(aging operation and setup analysis)

The single CD player plays in normal mode. After being set up, it will display FOK (focus), LOCK (spindle), subcode, sound skip, protection against a mechanical error or the like, occurrence of an error, cause and time of an expiry, if any, (and disc number).

During the setup, the CD software operation status (internal RAM and C-point)is displayed.

(1) How to enter NEW TEST Mode

See the test mode flow chart Page 63.



(2) Relations of keys between TEST and NEW TEST Modes

Keys	Test Mode		New Test Mode	
	Regulator OFF	Regulator ON	PLAY in progress	Error Occurred, Protection Activated
BAND	Regulator ON	Regulator OFF	—	Time of occurrence / cause of error select
→	—	FWD-KICK	TRACK+ / FF	—
←	—	REV-KICK	TRACK- / REV	—
1	—	TRACKING CLOSE	SCAN	—
2	—	TRACKING OPEN	REPEAT	—
3	—	FOCUS CLOSE	RANDOM	—
6	To New Test Mode Select	FOCUS MODE	AUTO/MANU	—

Operations, such as EJECT, CD ON/OFF, etc. are performed normally.

(3) Error Cause (Error Number) Code

Error Code	Classification	Mode	Description	Cause	Detail
40	ELECTRIC	PLAY	FOK=L 100ms	Put out of focus	Scratch, Stain, Vibration, Servo defect, etc...
41	ELECTRIC	PLAY	LOCK=L 100ms	Spindle unlock	
42	ELECTRIC	PLAY	Subcode unacceptable 500ms	Failed to read subcode	
43	ELECTRIC	PLAY	Sound skipped	Last address memory operated	

(4) Indicating an Operation Status During Setup

Status No.	Description	Protection operation
01	Carriage home mode started	None
02	Carriage moving inwards	10-second time out, Home switch failed
03	Carriage moving outwards	10-second time out, Home switch failed
05	Carriage moving outwards	None
11	Setup started	None
12	Spindle turn/Focus search started	None
13	Waiting for focus closure (XSI=L)	Failure to close focus
10,14	Waiting for focus closure (FOK=H)	Failure to close focus
15, 16, 17	Focus closed, Tracking open	Focus disrupted
18	During focus AGC Subcode waiting	Focus disrupted
19	During tracking AGC	Disrupted focus
20	Waiting for MIRR, LOCK or subcode read Carriage closed, SPINDLE=ADAPTIVE	Focus disrupted, MIRR NG, Failure to lock, Failed to read subcode

(5) Example of Display.

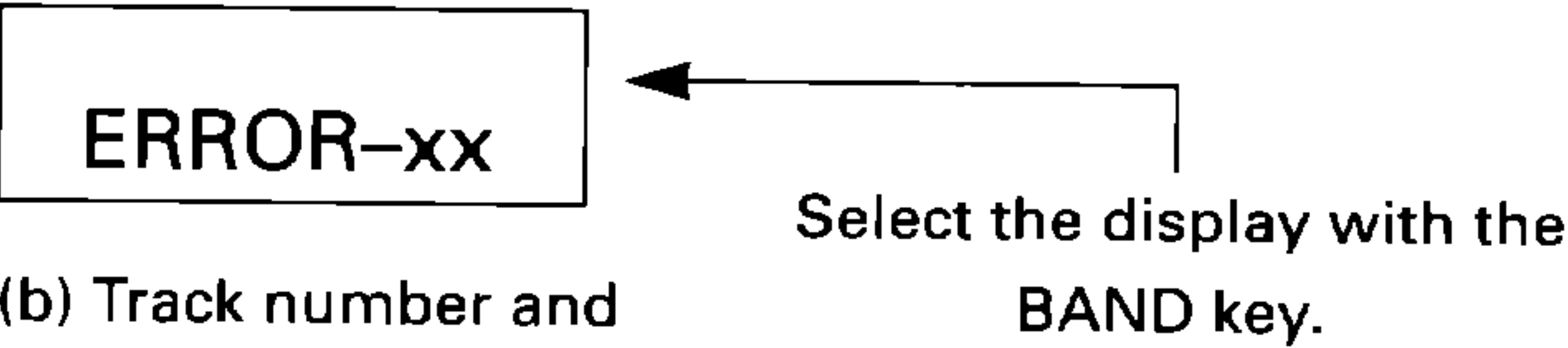
·SET UP in progress

TNo.	Min	Sec
91	91	91

·Operation (PLAY, SEARCH, etc.) in progress perfectly identical with that in the normal mode.

·Protection/Error upon occurrence

(a) Error number indicated

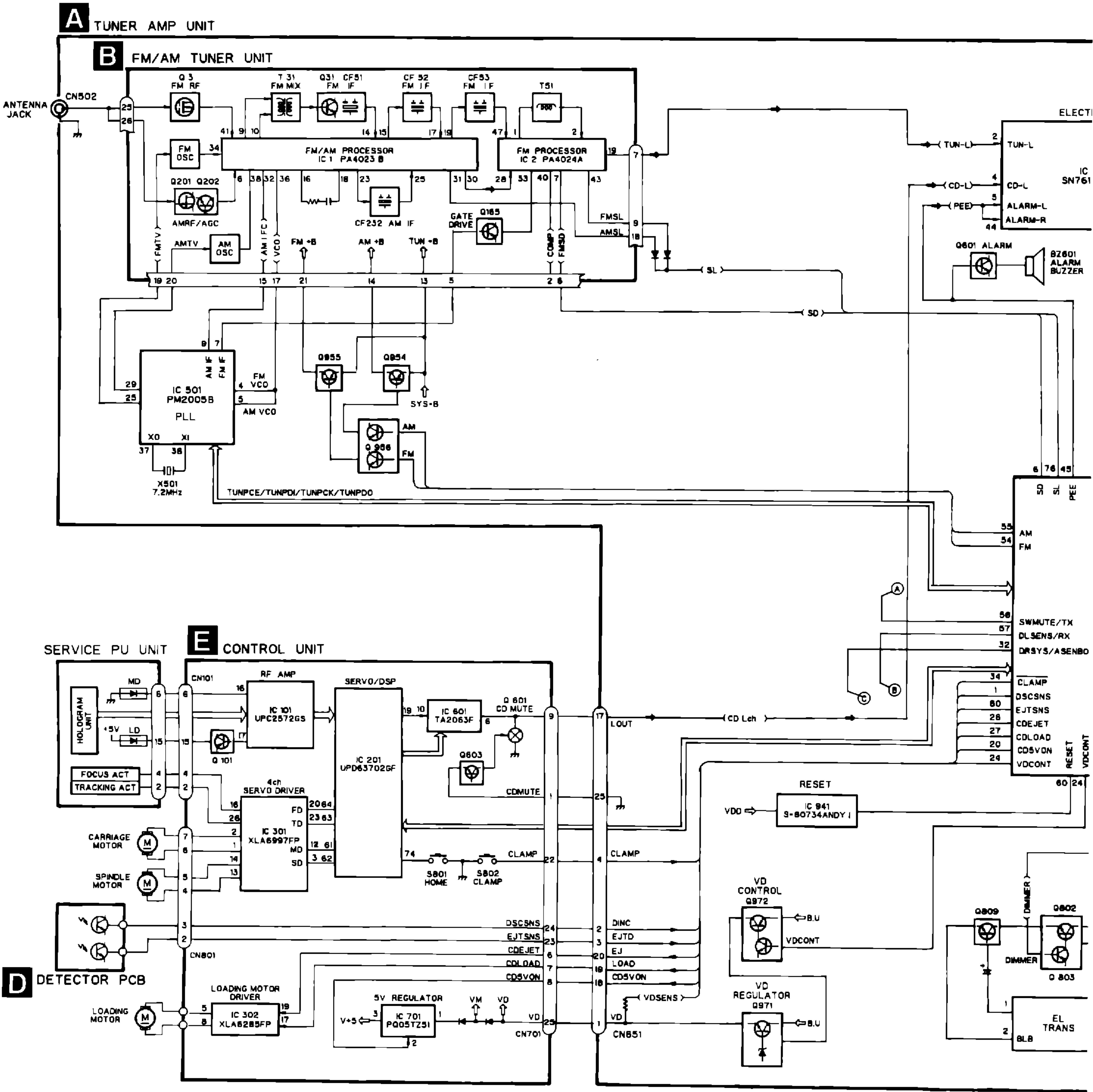


(b) Track number and absolute time indicated

TNo.	Min	Sec
10	40	05



7.3 BLOCK DIAGRAM





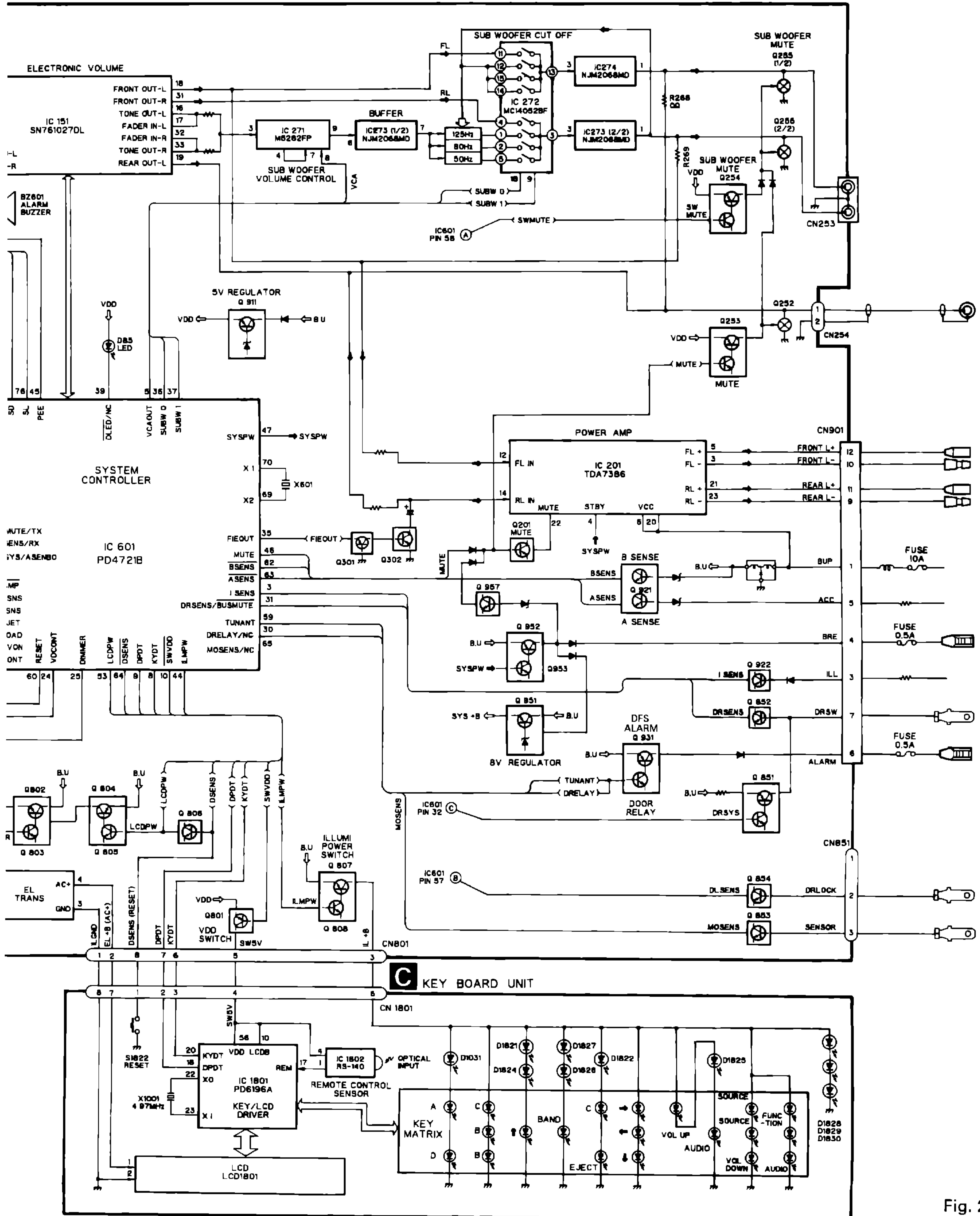


Fig. 27



8. OPERATIONS AND SPECIFICATIONS

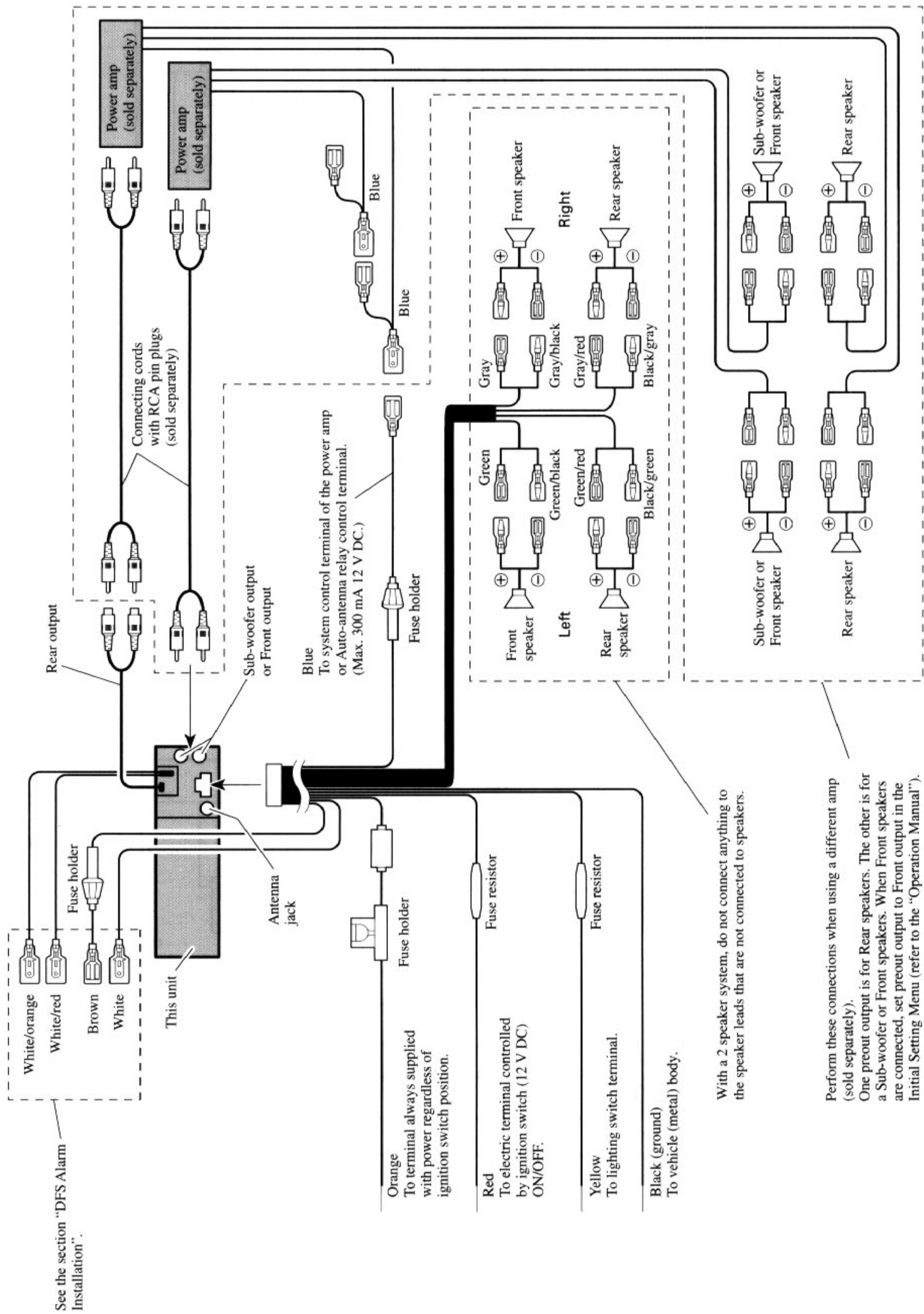


Fig. 28



**CAUTION**

- Because of the complexity of today's technically advanced vehicle wiring systems, we recommend that your DFS Alarm be installed ONLY by a professional Pioneer installer.

Affix the included deterrent stickers to the inside of the front door windows.

**Description**

- White (DOOR SWITCH)** ..... (Fig. 29 & 30)  
This lead is used to trigger DFS Alarm when any door is opened and may be connected to either positive or negative (+/-) type door pin switches.
- Brown (ALARM OUTPUT)** ..... (Fig. 31)  
This lead is a selectable constant or pulsed positive (+) output capable of driving up to 2 relays (500 mA) max. Use this lead to trigger relays for siren, horn, honk or flashing lights.
- White/Red (ALARM SENSOR)** ..... (Fig. 32)  
This lead is a negative (-) input and is provided for hookup of negative triggering sensors such as shock, or glass sensors (sold separately).
- White/Orange (DOOR LOCK)** ..... (Fig. 33)  
This lead is used to disarm DFS Alarm from power door lock systems or alarm systems with remote unlock. This lead may be connected to door lock systems with either positive or negative (+/-) unlock triggers.

**Door Switches**

The DFS Alarm's door trigger input is designed to work with either positive or negative door pin switches. After hookup, simply set door system type from DFS Alarm Setting Menu.

Domelight Delay-DFS Alarm will wait for last door to close and courtesy light to turn off before Exit Delay Timer Starts.

**DOOR SWITCH (White)**

■ **Grounding Type Switch:**

GM, Chrysler, Japanese, and most European vehicles.

**Note:**

- Set DFS Alarm to recognize ground trigger from DFS Alarm Setting Menu. Set Door System to "DR-L :CLS".

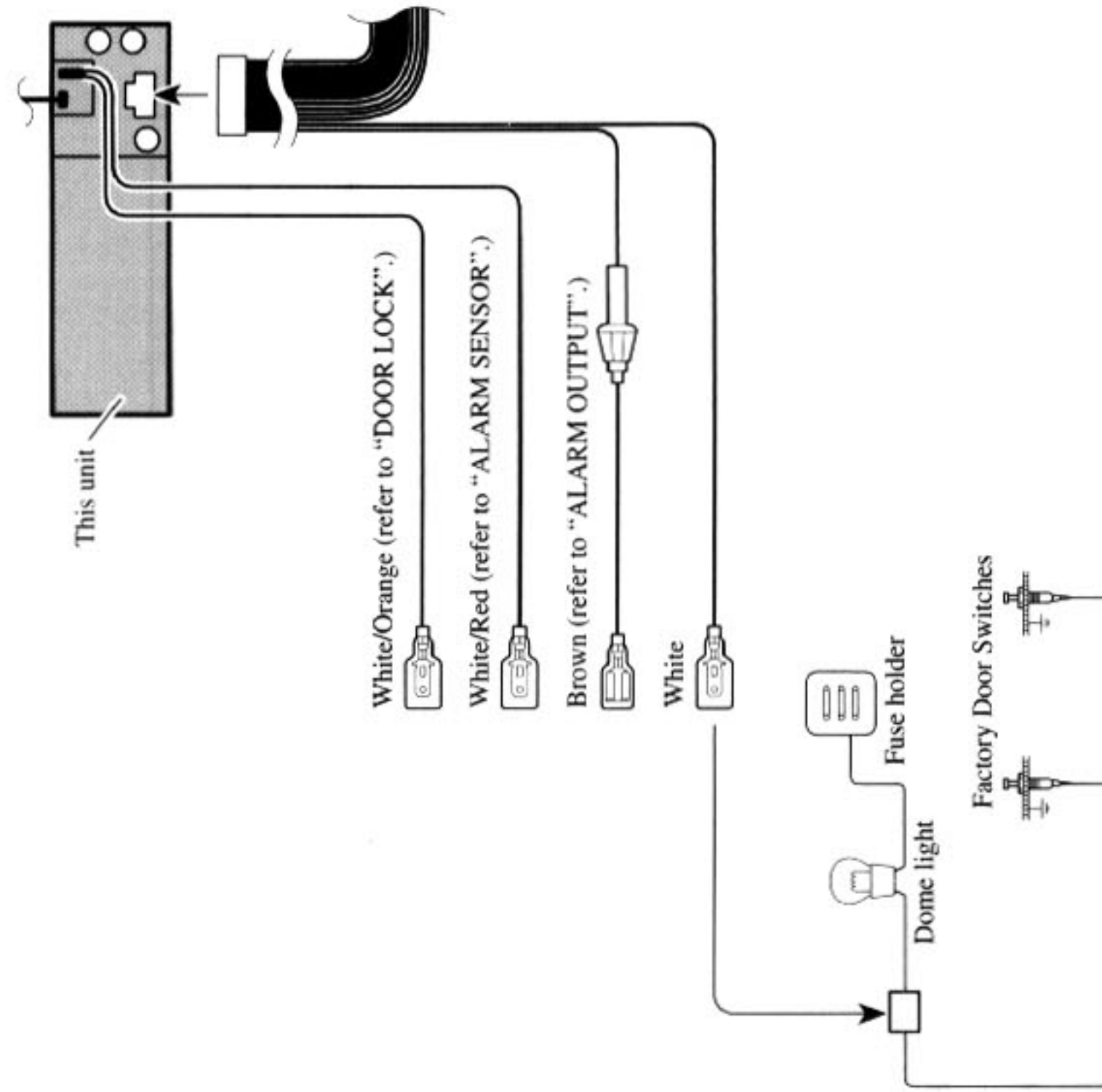


Fig. 29



■ Positive (Non-grounding) Type Switch:

Ford, Jaguar, Mercedes

Note:

- Set DFS Alarm to recognize positive trigger from DFS Alarm Setting Menu. Set Door System to "DR-H-CLS".

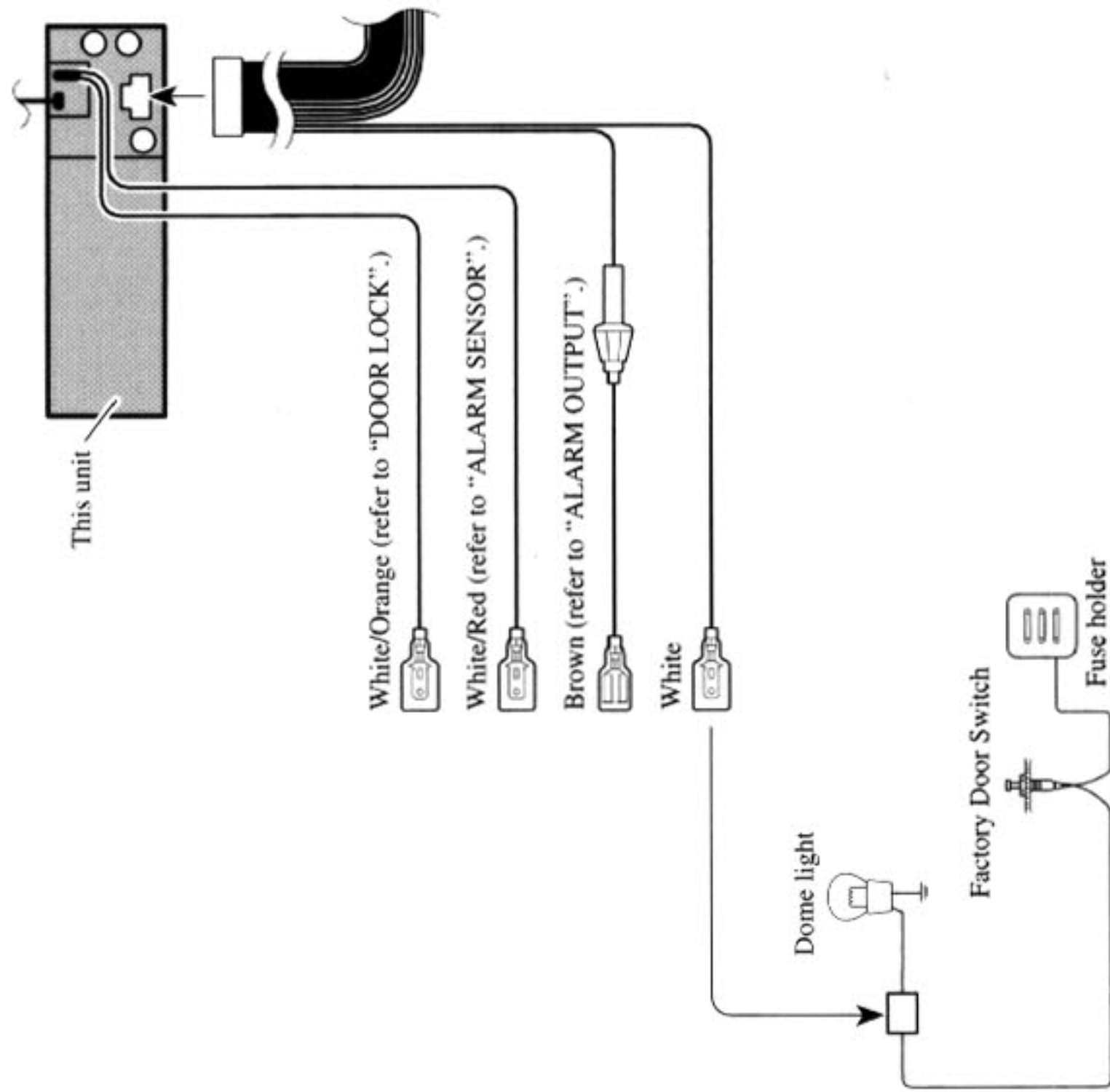


Fig. 30

■ Installing New Pin Switches

Separately sold pin switches are available that can be used to protect your vehicle's trunk, hood etc. When you purchase these, make sure that you first confirm that they can be used with your vehicle's door system type. Follow the makers' instructions as to installation and wiring.

ALARM OUTPUT (Brown)

The brown lead provides a +12 V, constant or pulsed output while alert is sounding. This lead has a maximum current capability of 500 mA and can be used to trigger a relay to sound a siren, horn or flash lights.

■ Recommended Wiring:

- 30 amp relay (sold separately) required to operate siren, horn or lights.
- Connect Brown wire to one side of relay coil.
- Connect ground to other side of coil.

For sirens, horns or lights requiring +12 V trigger

- Connect normally open to fused, constant +12 V source.

For horns or lights requiring ground trigger

- Connect normally open pin to ground.

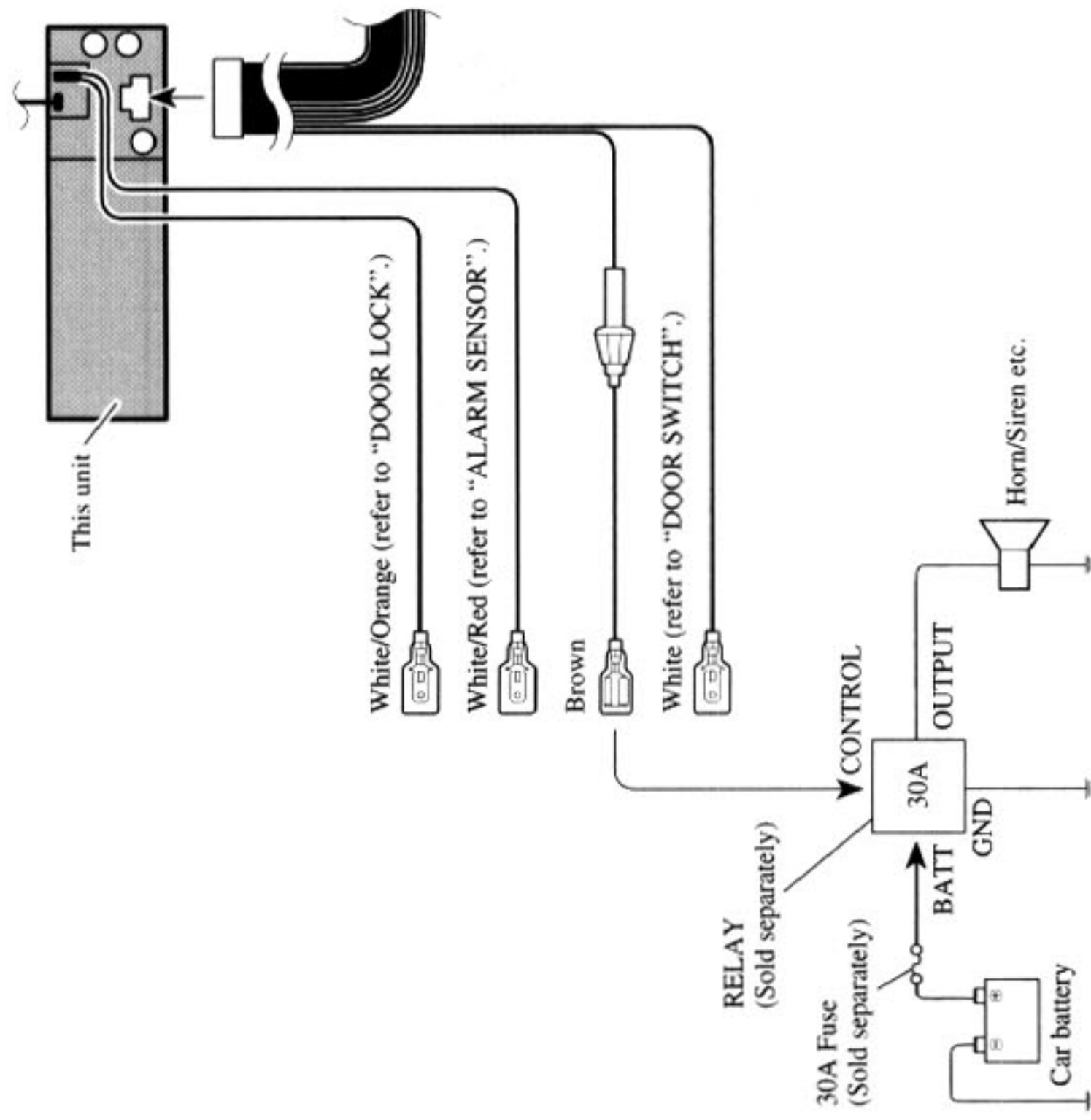


Fig. 31



## ALARM SENSOR (White/Red)

The white/red lead is a negative triggered (Grounding) input that can be connected to various separately sold shock or glass sensors. There is no limit as to how many sensors are connected, so you can ensure total protection of your vehicle. Follow the makers instructions as to installation and wiring.

### Note:

- If the shock sensor detects vehicle vibrations, use the negative (-) output type. If you use the positive (+) output type, the alert will sound continually, and the shock sensor will not operate correctly.

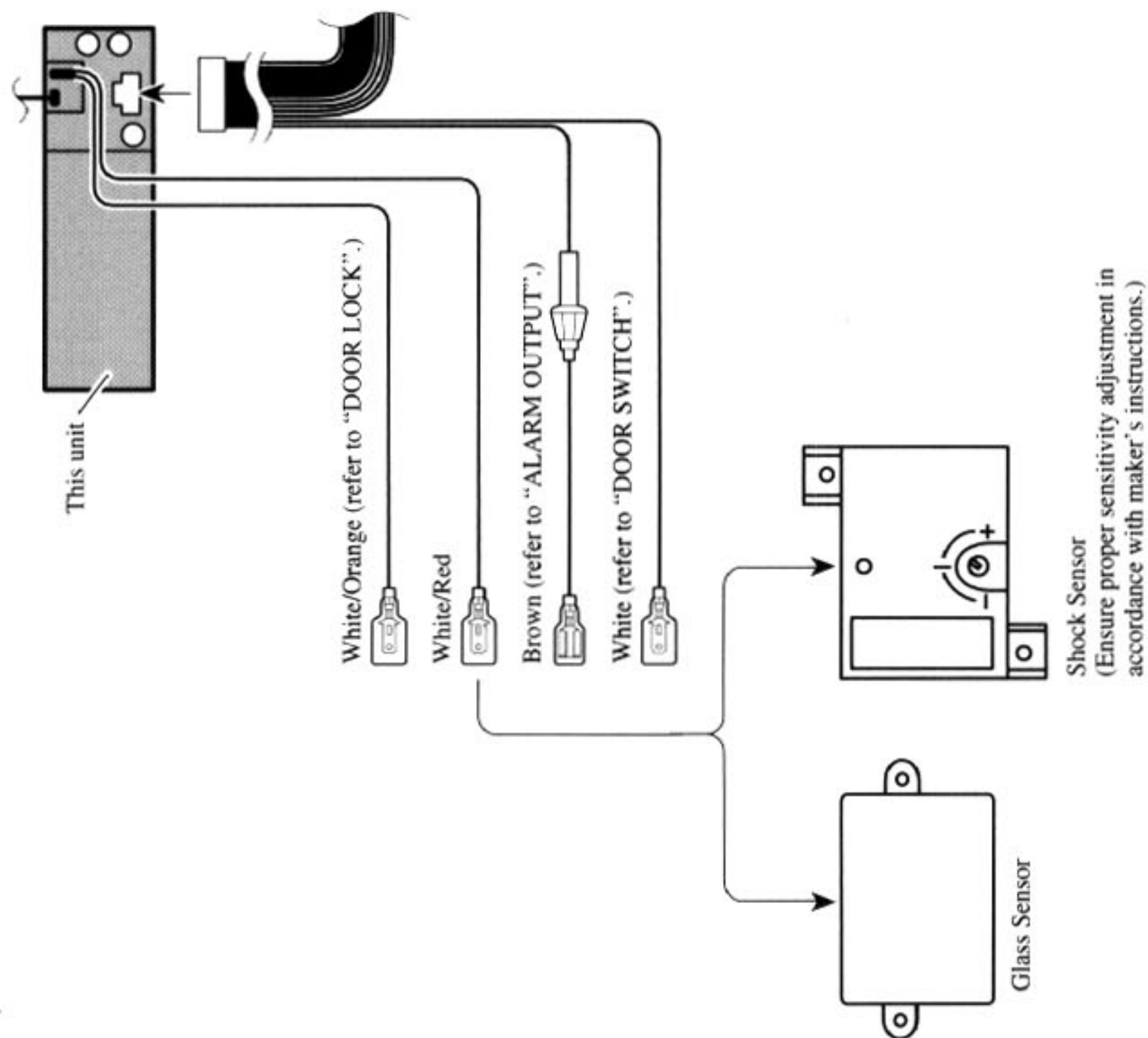


Fig. 32

## DOOR LOCK (White/Orange)

The white/orange lead should be connected to the "unlock" lead for your vehicles door locking system, so that when you open the driver's door by your vehicle's remote control, your Pioneer DFS Alarm is deactivated.

First, locate the two wires from the lock/unlock switch that operate the factory door lock solenoids for the driver's side. Using a meter, determine which lead is used to unlock the door; connect this to the white/orange lead of your Pioneer Car Stereo. In the DFS Alarm Setting Menu, select the door-lock system type according to your vehicle (grounding or non-grounding).

If you have difficulty wiring this connection, please consult your nearest Installation specialist.

### Note:

- If your vehicle is equipped with a central door lock but the glass or shock sensor is not connected, if the window is broken and the central door lock is released, this unit's DFS Alarm will not operate.
- Pioneer recommends that both a shock sensor and glass sensor be installed when you are using the "Remote Disarming" feature.

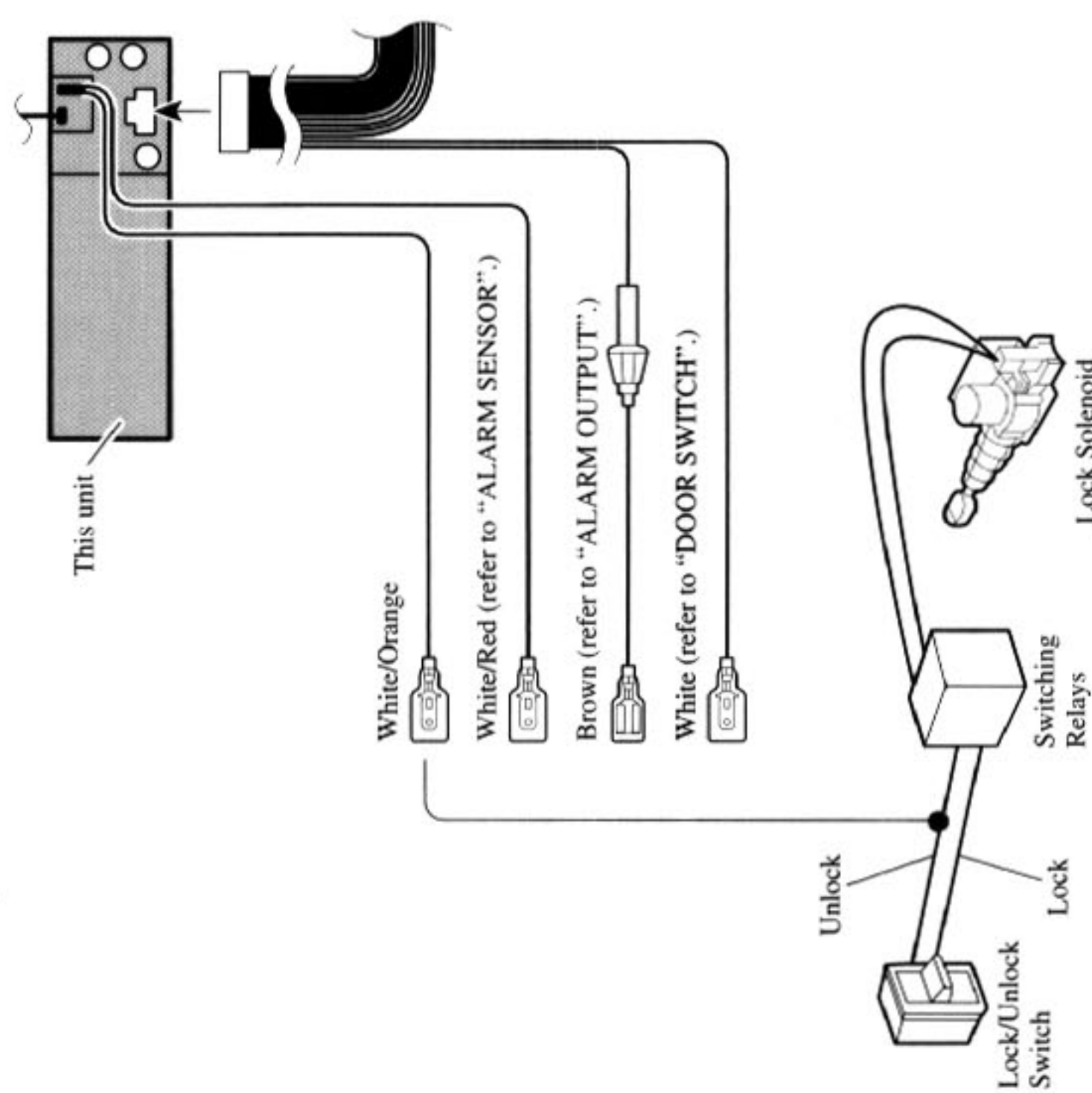


Fig. 33



Key Finder

■ Head Unit

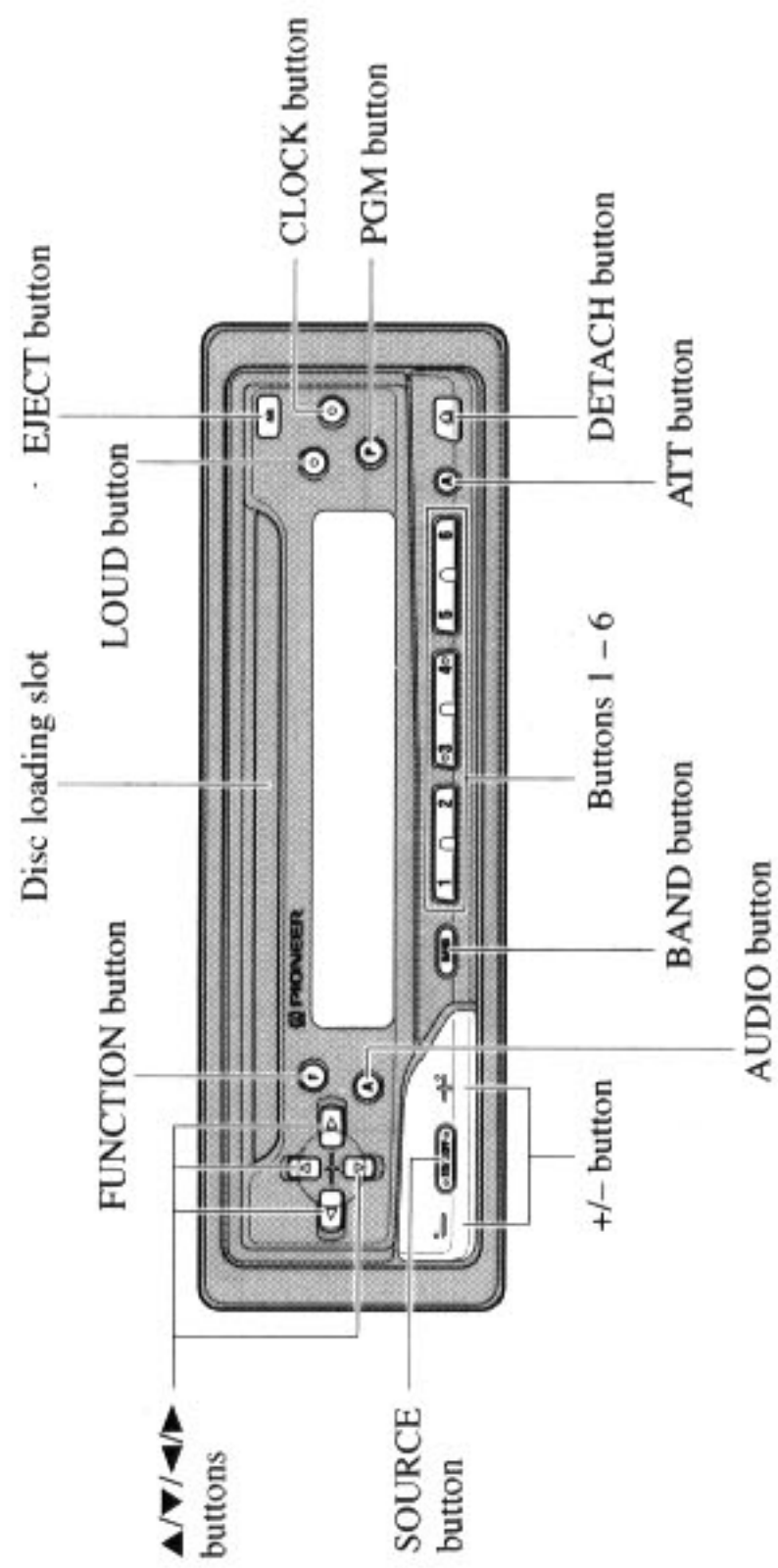


Fig. 34

■ Remote Controller

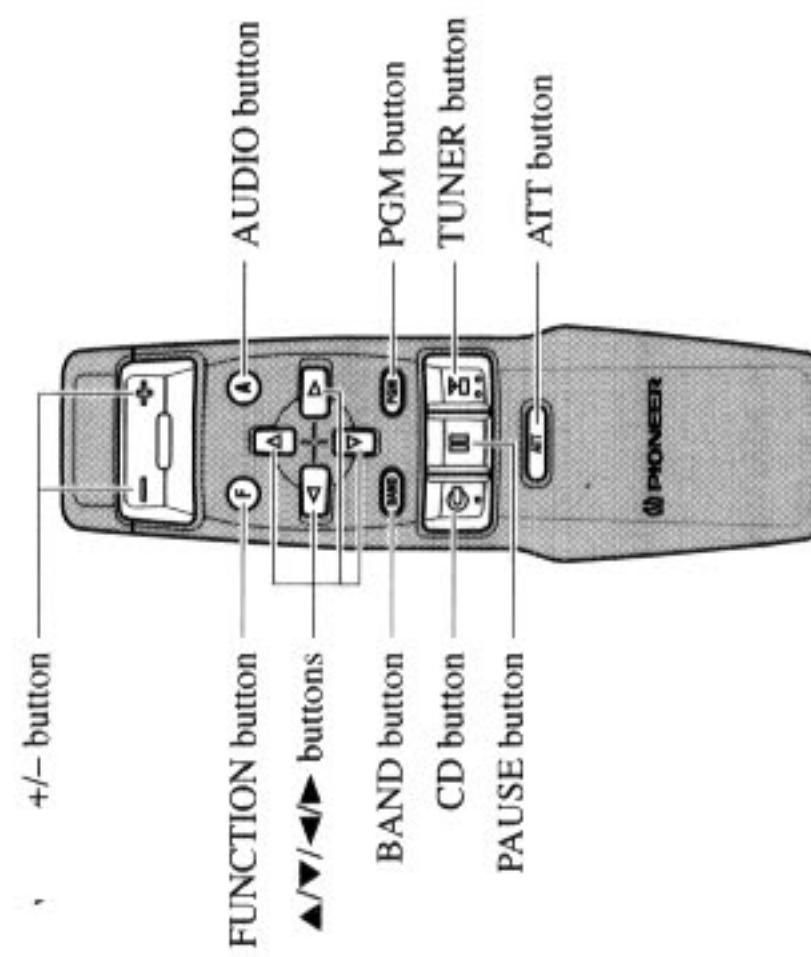


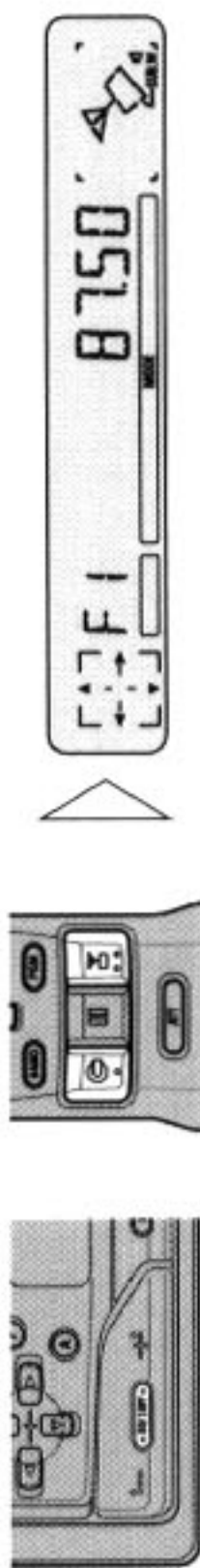
Fig. 35



## Basic Operation

### Switching Power ON/OFF

- Select the desired source (such as the tuner).



#### ■ Head Unit

Each press of the SOURCE button selects the desired source in the following order:

Built-in CD player → Tuner

To switch the sources OFF, hold down the SOURCE button for 1 second or more.

#### ■ Remote Controller

Each press of the CD button selects the desired source in the following order:

Built-in CD player → Sources OFF

Each press of the TUNER button selects the desired source in the following order:

Tuner → Sources OFF

#### Note:

- The sound source will not change if no disc is set in this unit.

## Remote Controller and Care

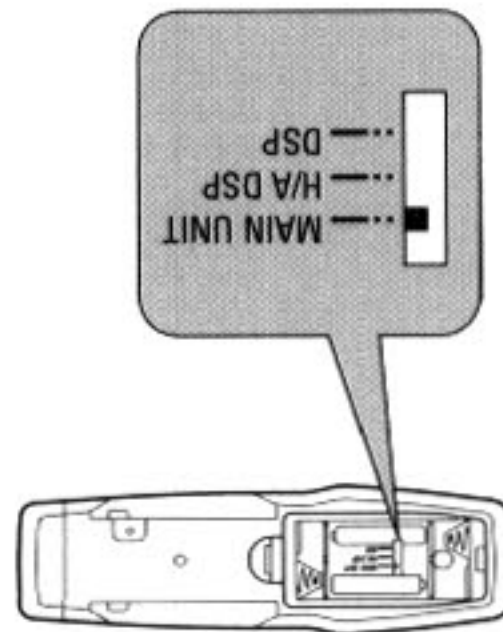
### Using the Remote Controller

This product is equipped with a remote controller for convenient operation.

- Point the controller in the direction of the front panel to operate.
- When the controller is not in use, attach it firmly to the provided mounting base.

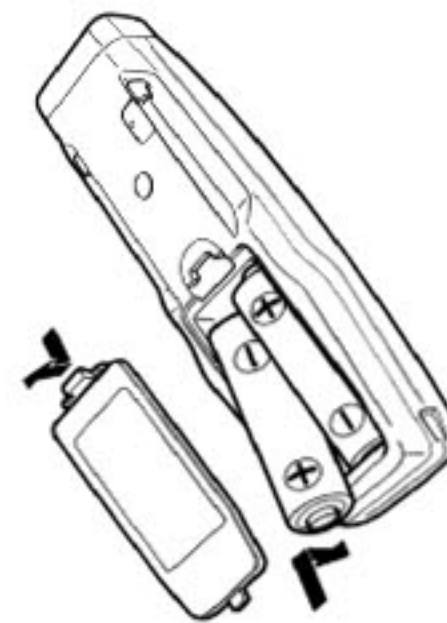
#### Precaution:

- Do not store the remote controller in high temperatures or direct sunlight.
- The controller may not function properly in direct sunlight.
- Do not let the remote controller fall onto the floor, where it may become jammed under the brake or accelerator pedal.
- Open the cover on the rear of the remote control, and you'll find a switch. Do not change this switch's position from the MAIN UNIT position. (Initially, the switch is set to the MAIN UNIT position.) If you change the switch setting, correct operation of this unit will not be possible.



### Batteries

- Remove the cover on the back of the remote controller and insert the batteries with the (+) and (-) poles pointing in the proper direction.



#### Precaution:

- Use only AAA or IEC R03 1.5 V batteries.
- Remove the batteries if the remote controller is not used for a month or longer.
- Do not attempt to recharge the supplied batteries.
- Do not mix new and used batteries.
- If the event of battery leakage, wipe the remote controller completely clean and

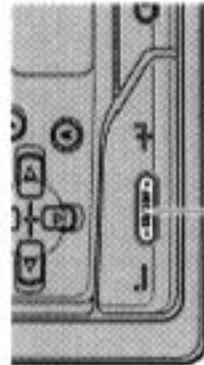


Tuner Operation

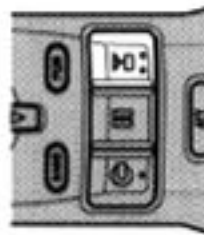
Reset the AM tuning step from 9 kHz (the factory preset step) to 10 kHz when using the tuner in North, Central or South America. (See page 83.)

Basic Operation of Tuner

1. Select Tuner.



Each press changes the source ...

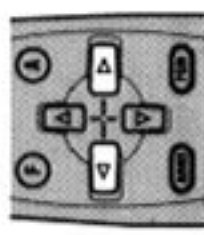
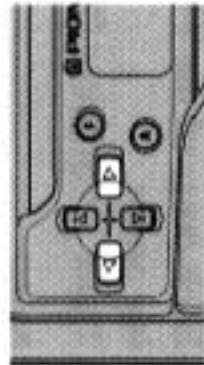


2. Select the desired band.



F1 → F2 → F3 → AM

3. Tune the receiver to a higher or lower frequency.



"O" stereo

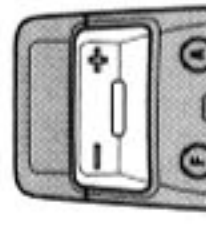
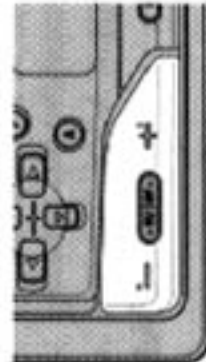
This product's tuner lets you select the tuning by changing the length of the time you press the button.

Manual Tuning (step by step)	0.3 seconds or less
Seek Tuning (automatically)	0.3 – 2 seconds
Manual Tuning (continuously)	2 seconds or more

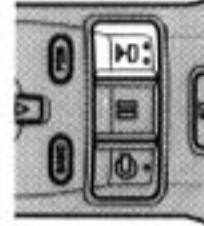
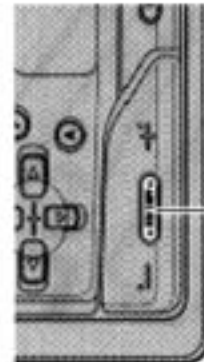
Note:

- "O" stereo indicator lights when a stereo station is selected.

4. Raise or lower the volume.



5. Turn the source OFF.



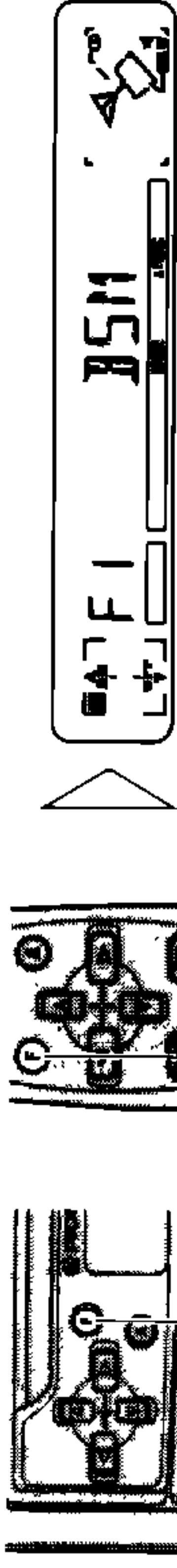
Hold for 1 second



Entering the Function Menu

In this menu you can select tuner functions.

- Select the desired mode in Function Menu.



Each press changes the mode ... Each press changes the mode ...

Each press of the FUNCTION button selects the mode in the following order:

BSM → LOC

To cancel the Function Menu, press the BAND button.

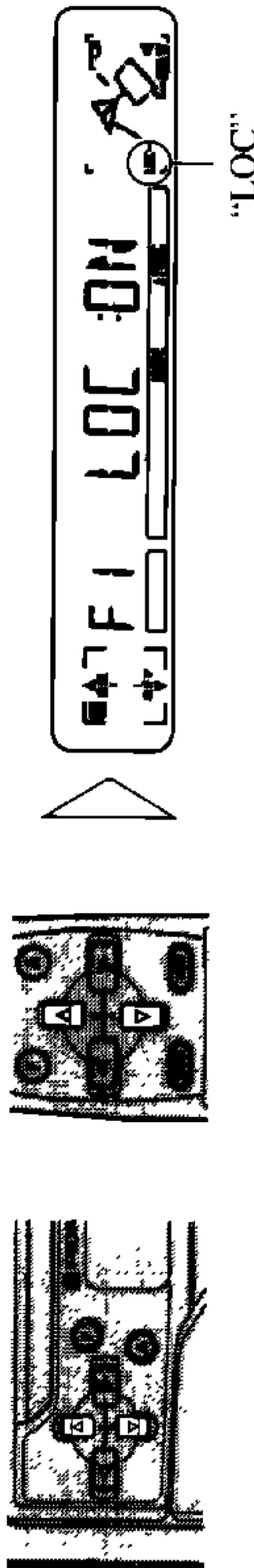
Note:

- After entering the Function Menu, if you do not perform an operation within about 30 seconds, the Function Menu is automatically canceled.

Local Seek Tuning

This mode selects only stations with especially strong signals.

1. Select the Local mode (LOC) in the Function Menu.
2. Switch the Local mode ON or OFF.



To cancel the Function Menu, press the BAND button.

Preset Tuning

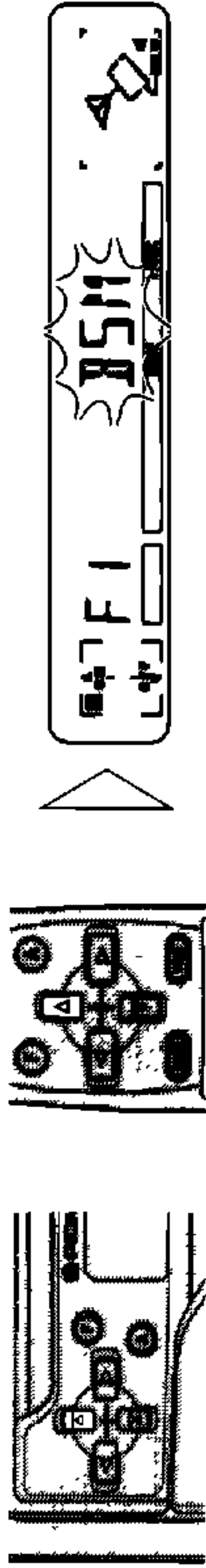
Up to 18 FM stations (6 in F1 (FM1), F2 (FM2) and F3 (FM3)) and 6 AM stations can be stored in memory.

Store the stations in memory under buttons 1 – 6 beforehand with the BSM (Best Stations Memory) or Preset Memory function.

BSM (Best Stations Memory)

The BSM function stores stations in memory automatically.

1. Select the BSM mode (BSM) in the Function Menu.
2. Switch the BSM mode ON.



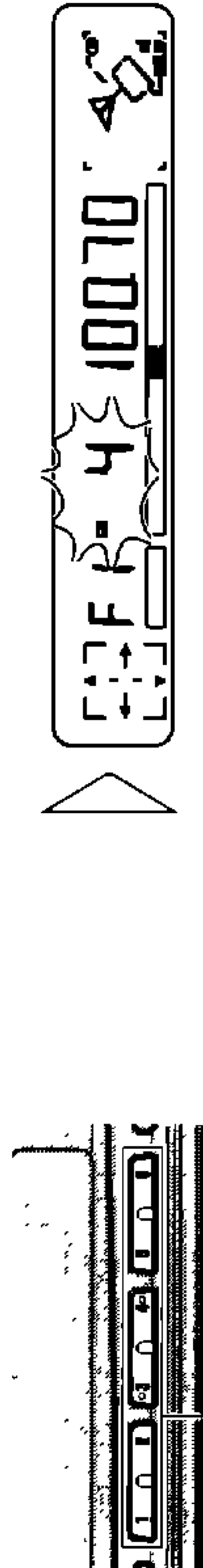
The stations with the strongest signals will be stored under buttons 1 – 6 and in order of their signal strength.

To cancel the Function Menu, press the BAND button.

Preset Memory

The Preset Memory function stores stations in memory manually.

1. Select the station whose frequency you want to store in memory.
2. Press one of buttons 1 – 6 for 2 seconds or longer to store the desired stations. (eg. Press button 4.)



Hold for 2 seconds

The station is stored in memory under the selected button.

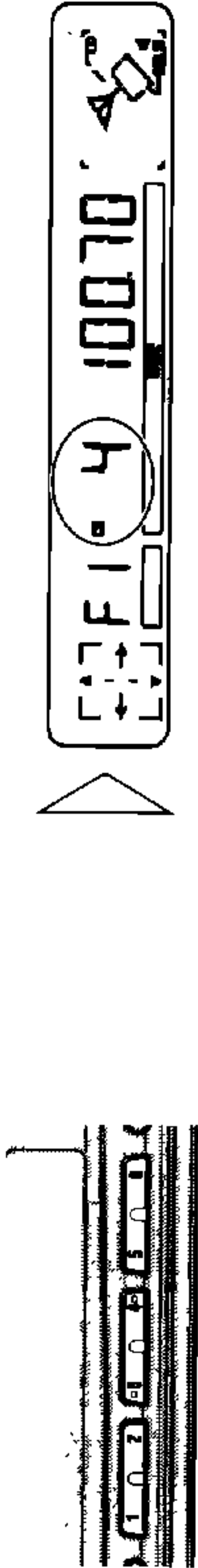


Tuner Operation

Recalling Preset Stations

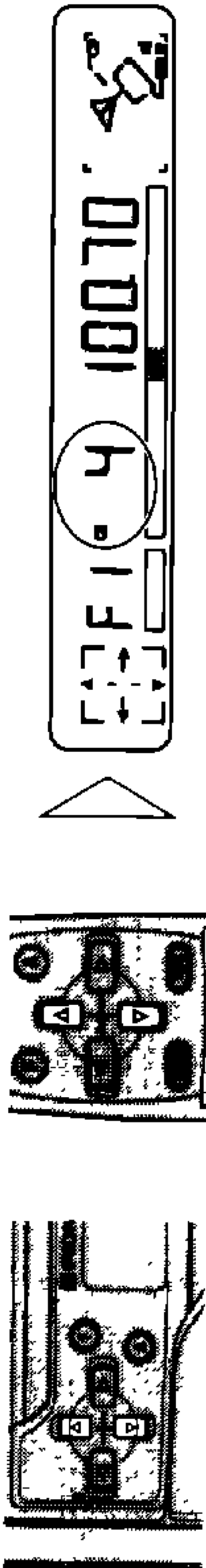
There are two ways to recall preset stations.

- **Direct Recall**
  - Press one of buttons 1 – 6 to recall a station preset under that button. (eg. Press button 4.)



■ **Sequential Recall**

- Recall a station preset under button 1 – 6.

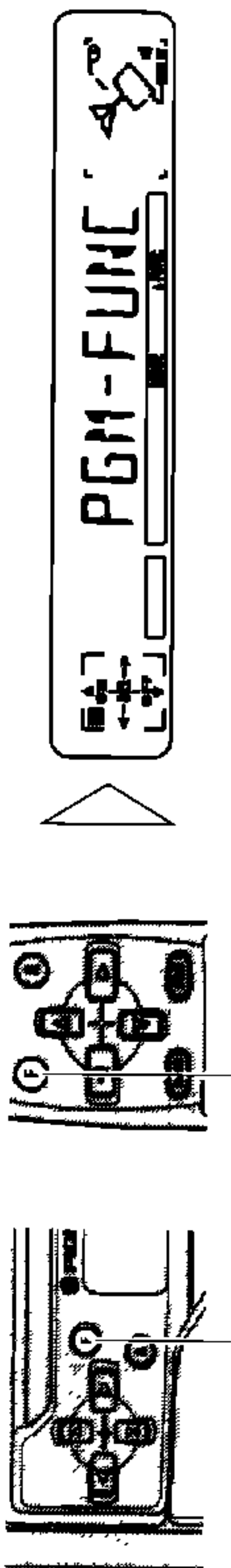


Using the PGM (Programmable) Button

You can memorize Function Menu BSM (BSM) and Local (LOC) functions in the Programmable button.  
Initially, the BSM function is memorized in the Programmable button.

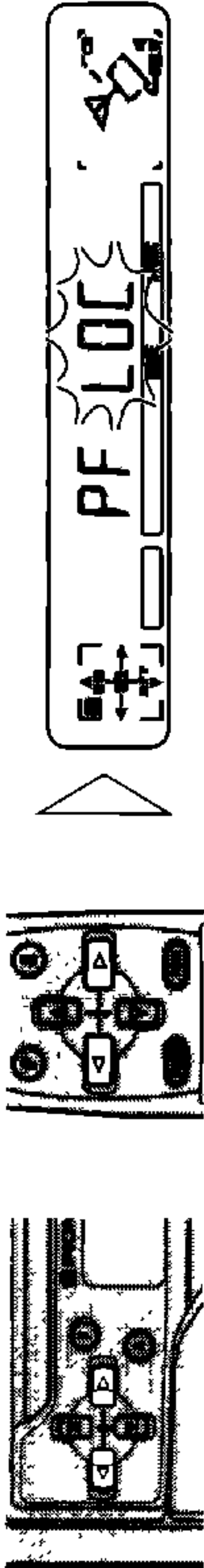
■ **Setting the Programmable Button**

1. Select the Programmable button setting mode (PGM-FUNC).

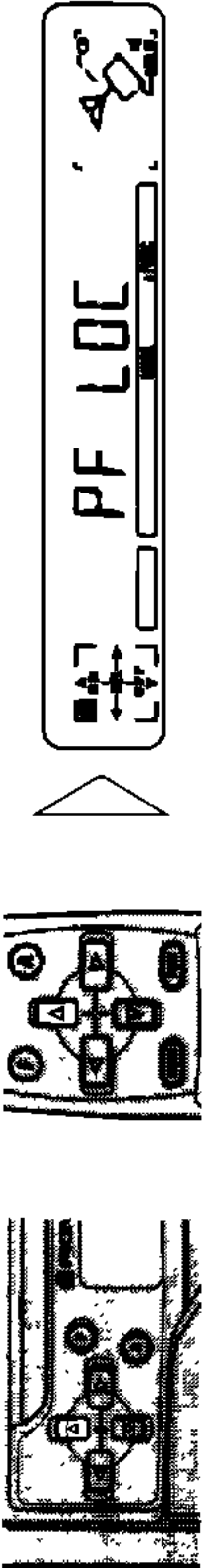


Hold for 2 seconds      Hold for 2 seconds

2. Select the function you want to memorize in the Programmable button.



3. Memorize the function in the Programmable button.

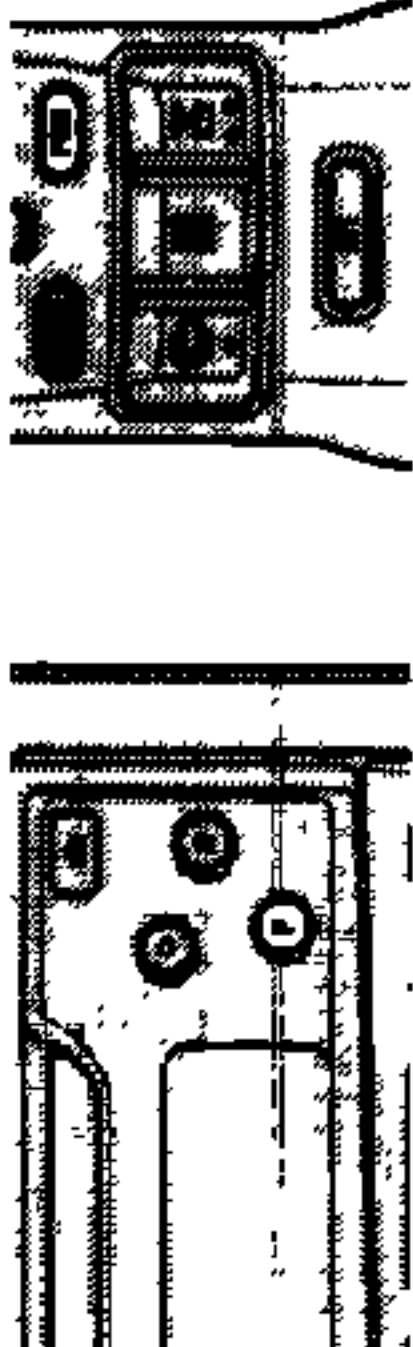


To cancel the Programmable button setting mode, press the BAND button.

■ **Using the Programmable Button**

The Programmable button operates in a different way depending on the function programmed (memorized).

- Use the Programmable button.



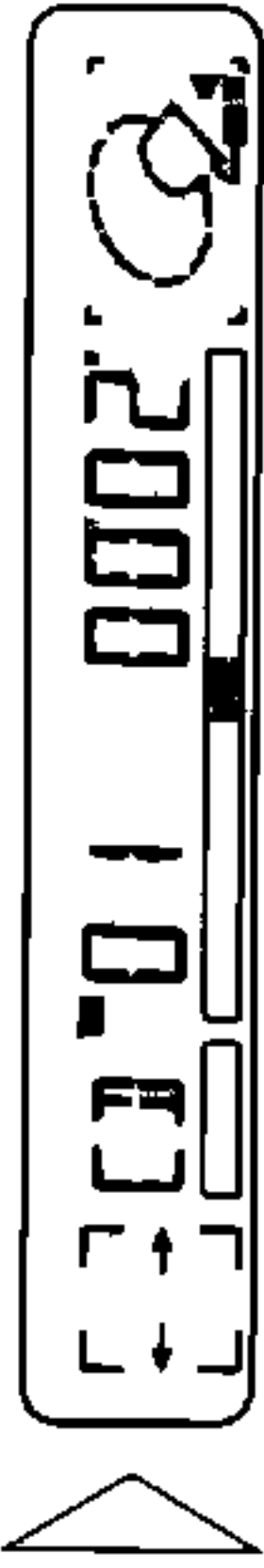
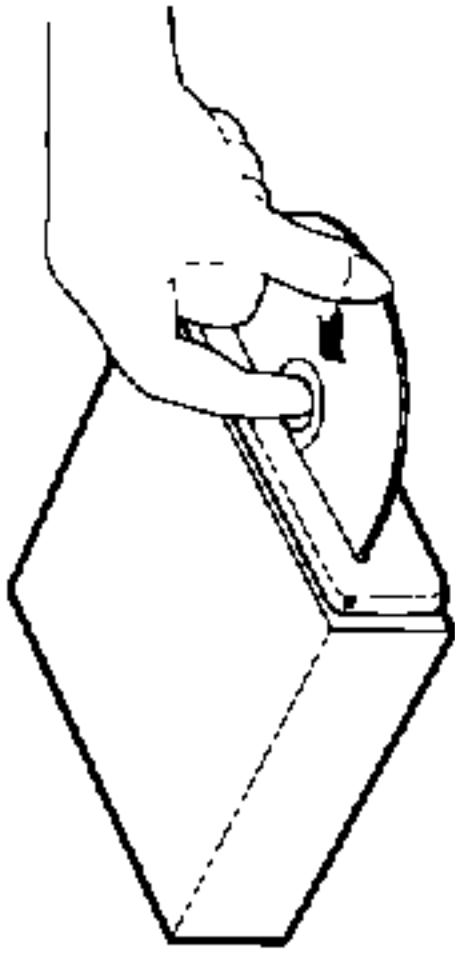
Function	Press	Hold for 2 seconds
BSM	OFF	ON
LOC	ON/OFF	



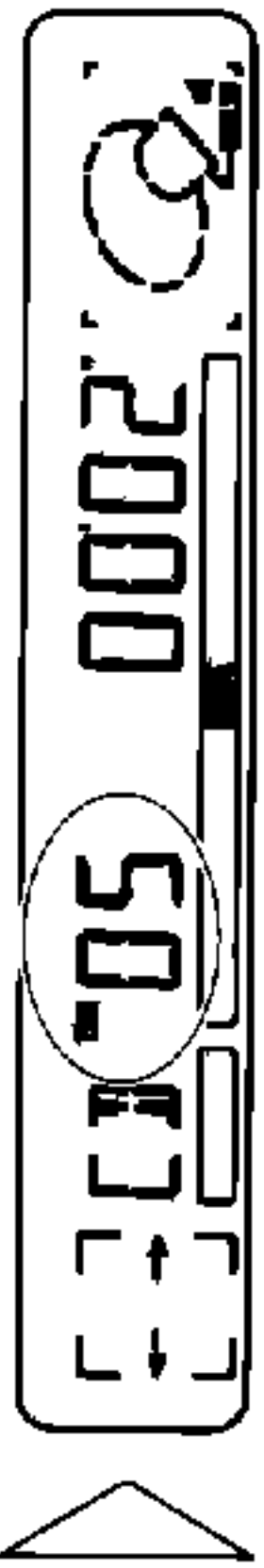
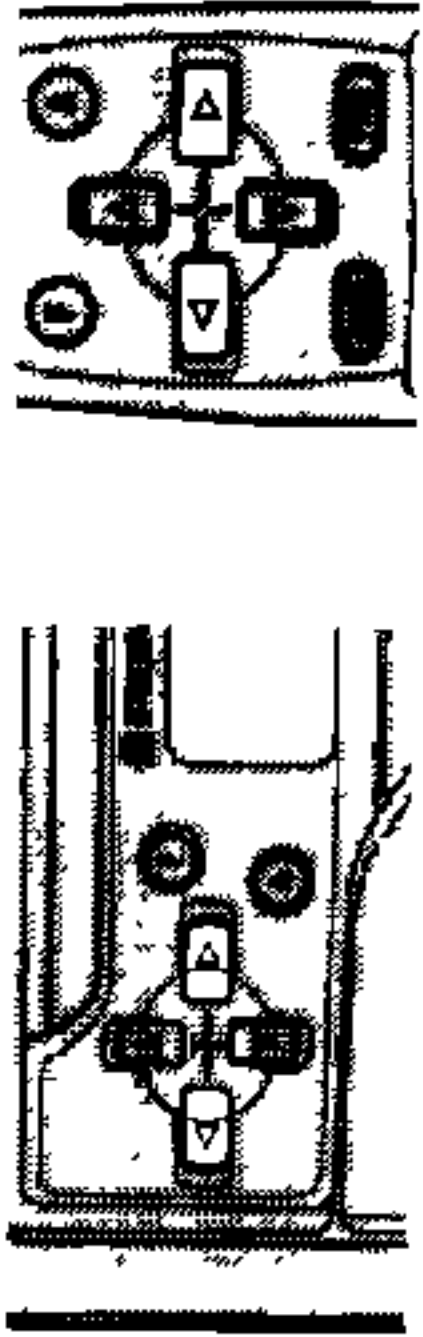
Basic Operation of Built-in CD Player

The built-in CD player plays one standard 12 cm or 8 cm (single) CD at a time. Do not use an adapter when playing 8 cm CD.

1. Insert the disc with the recorded (iridescent) surface down.



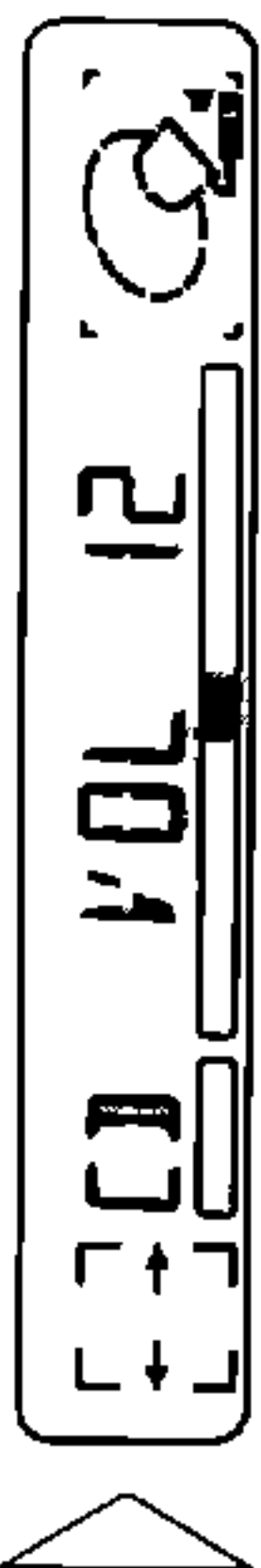
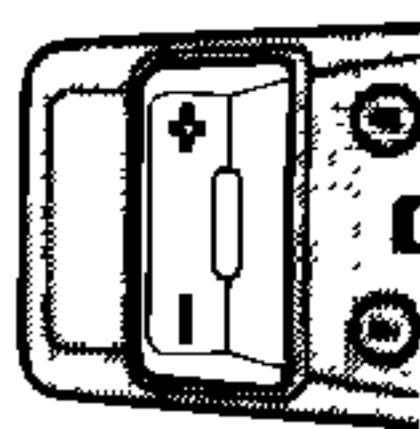
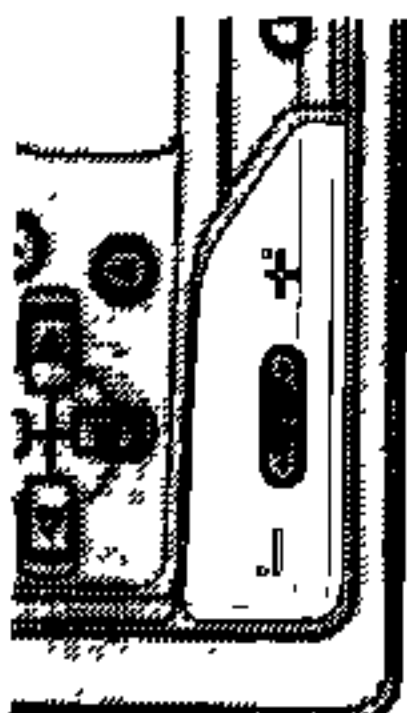
2. Select the desired track (and phrase).



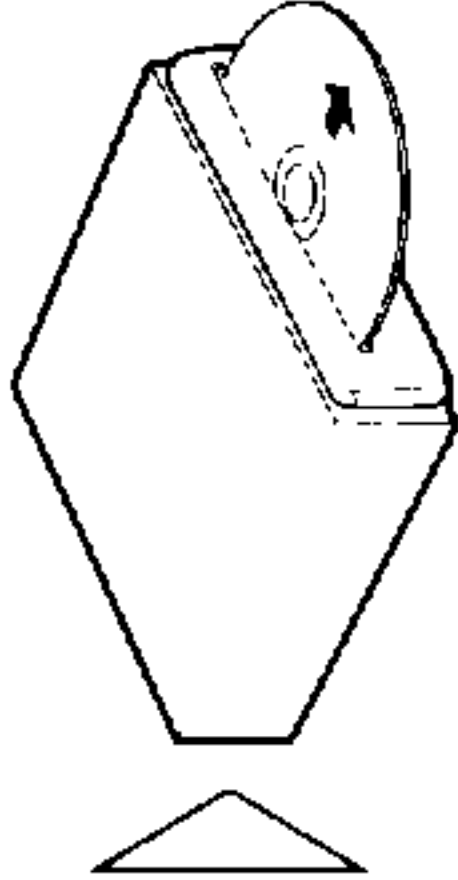
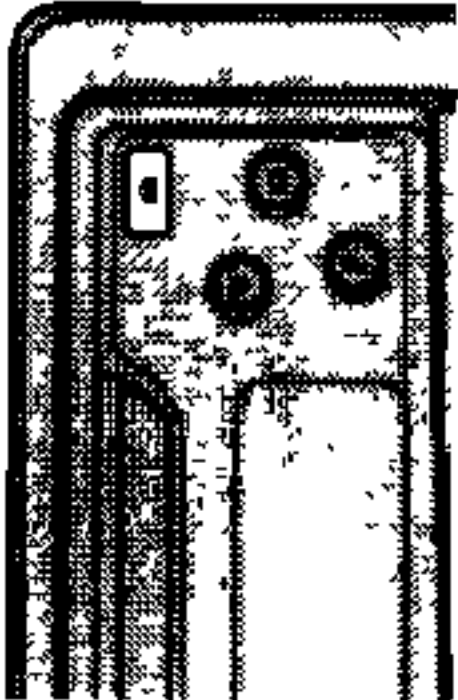
This product's built-in CD player lets you select the Track Search function or Fast-forward/Reverse function by changing the length of the time you press the button

Track Search	0.5 seconds or less
Fast-forward/Reverse	Continue pressing

3. Raise or lower the volume.



4. Remove the disc.



Note:

- The CD function can be turned ON/OFF with the disc remaining in this product. (See page 73.)
- Discs left partially inserted after ejection may incur damage or fall out.
- If a disc cannot be inserted fully or playback fails, make sure the recorded side is down, push the EJECT button and check the disc for damage before reinserting it.
- If a CD is inserted with the recorded side up, it will be ejected automatically after a few moments.
- If the built-in CD player cannot operate properly, an error message (such as "ERROR-14") appears on the display. Refer to "Built-in CD Player Troubleshooting" on page 80.

Pause

- Stop playback temporarily or restarts the system.



Note:

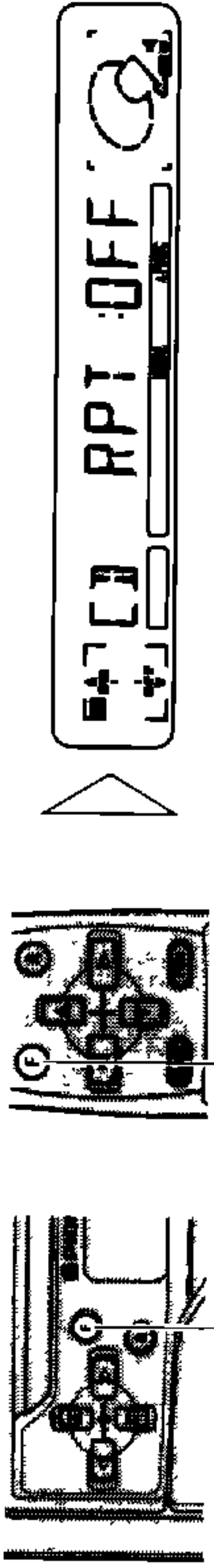
- You can also switch the Pause function ON/OFF in the Function Menu.



Entering the Function Menu

In this menu you can select built-in CD player functions.

- Select the desired mode in Function Menu.



Each press changes the mode ...  
Each press changes the mode ...

Each press of the FUNCTION button selects the mode in the following order:

RPT → RDM → SCAN → PAUSE

To cancel the Function Menu, press the BAND button.

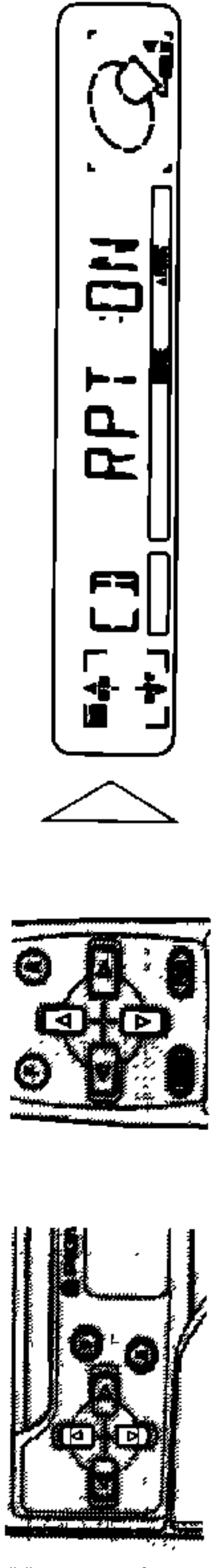
Note:

- After entering the Function Menu, if you do not perform an operation within about 30 seconds, the Function Menu is automatically canceled.

Repeat Play

Repeat Play plays the same track repeatedly.

1. Select the Repeat mode (RPT) in the Function Menu.
2. Switch the Repeat Play ON or OFF.



To cancel the Function Menu, press the BAND button.

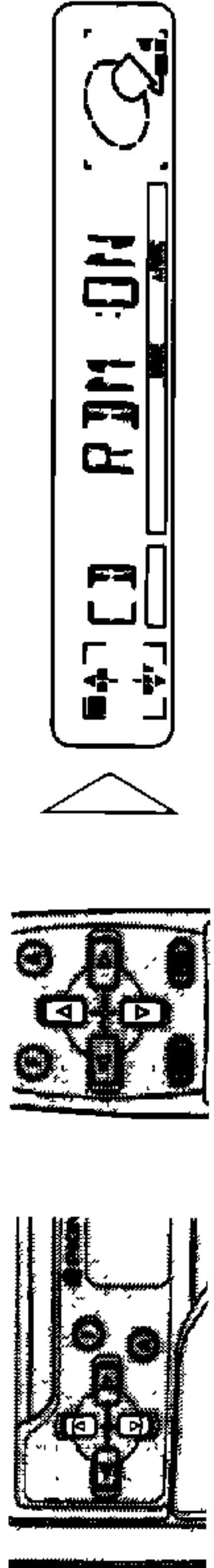
Note:

- If you perform Track Search or Fast-forward/Reverse, Repeat Play is automatically canceled.

Random Play

Random Play plays the tracks on a CD in random order for variety.

1. Select the Random mode (RDM) in the Function Menu.
2. Switch the Random Play ON or OFF.



To cancel the Function Menu, press the BAND button.

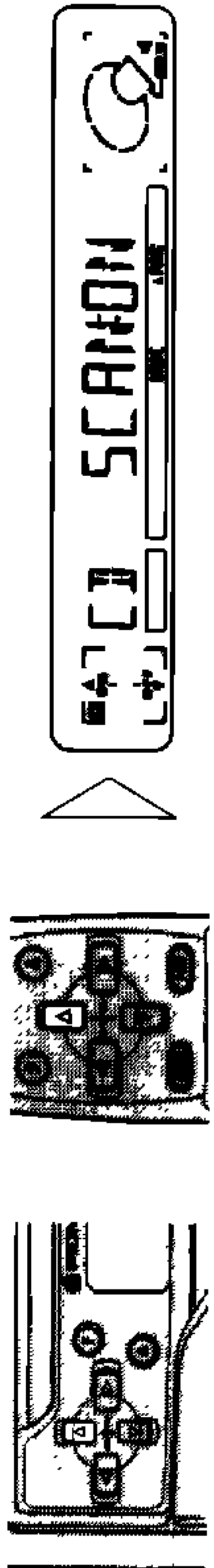
Note:

- Since playback is random, the same track may be repeated consecutively.

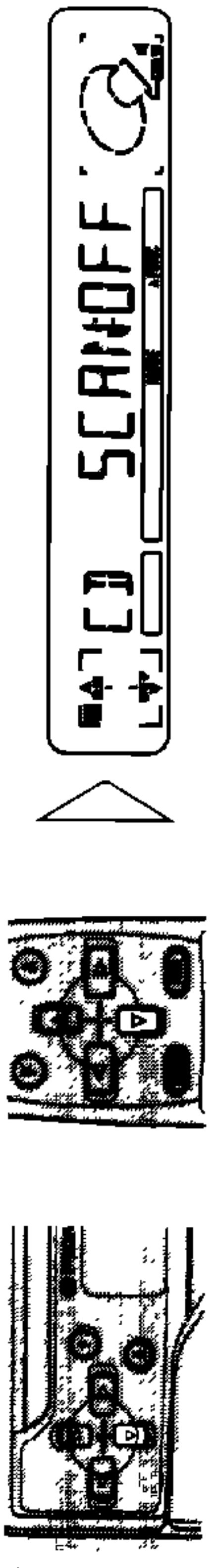
Scan Play

Scan Play plays the first 10 seconds or so of each track on a CD in succession.

1. Select the Scan mode (SCAN) in the Function Menu.
2. Switch the Scan Play ON.



3. When you hear the track you are looking for, cancel Scan Play.  
If the Function Menu is automatically canceled at this time, select the Scan mode in the Function Menu once more.



Playback of the current track continues.

To cancel the Function Menu, press the BAND button.

Note:

- Scan Play is canceled automatically after all the tracks on a disc have been scanned.

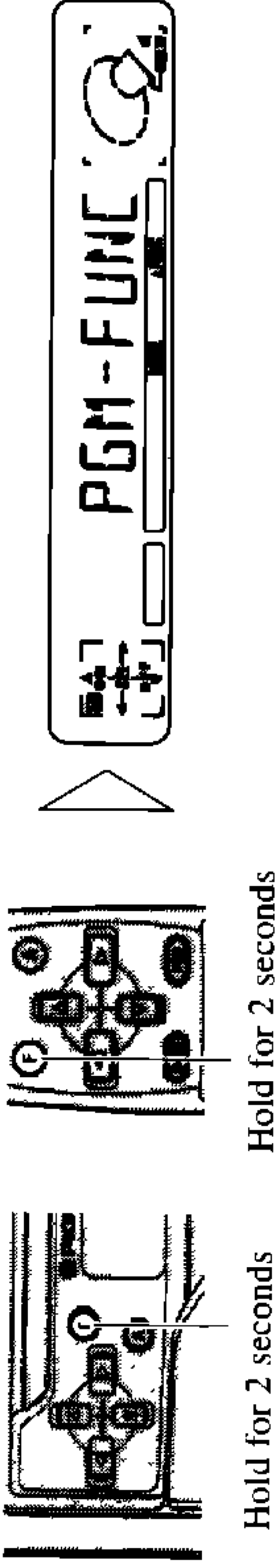


Using the PGM (Programmable) Button

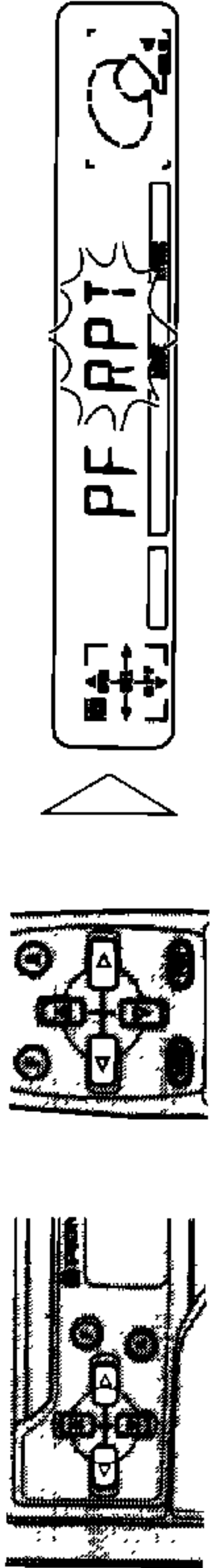
In the Function Menu, you can memorize the Pause (PAUSE), Repeat (RPT), and Random (RDM) functions in the Programmable button. Initially, PAUSE is memorized in the Programmable button.

Setting the Programmable Button

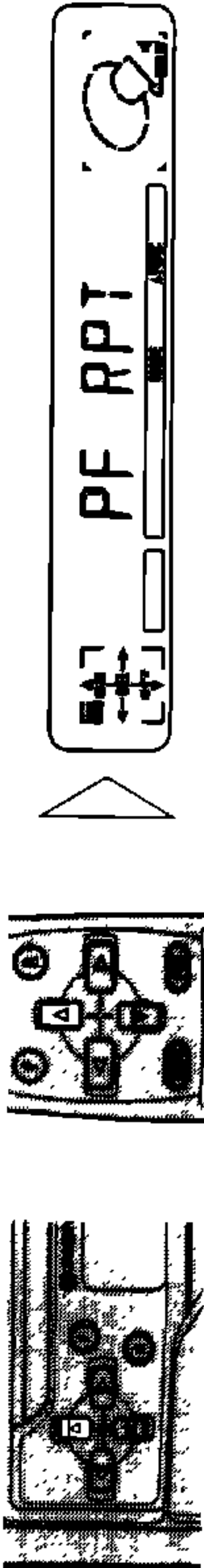
1. Select the Programmable button setting mode (PGM-FUNC).



2. Select the function you want to memorize in the Programmable button.



3. Memorize the function in the Programmable button.



To cancel the Programmable button setting mode, press the BAND button.

Using the Programmable Button

The Programmable button operates in a different way depending on the function programmed (memorized).

- Use the Programmable button.



Function	Press	Hold for 2 seconds
PAUSE	ON/OFF	
RPT	ON/OFF	
RDM	ON/OFF	

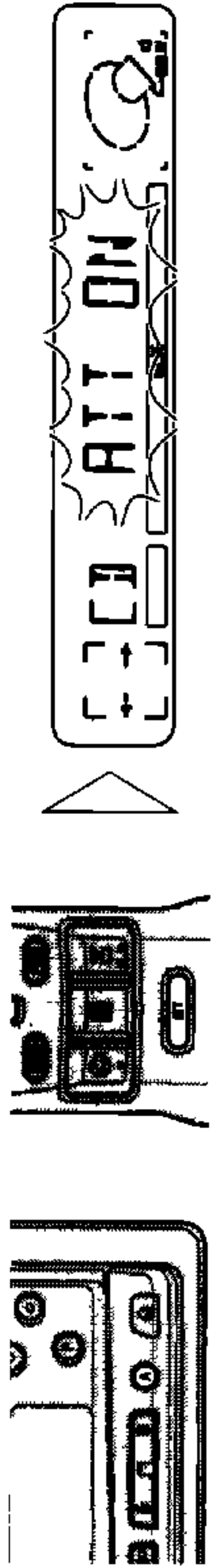


Audio Adjustment

Volume Attenuator

The Attenuator reduces the volume instantly.

- Cut the volume by about 90%.



Repeat the preceding operation to return to previous volume.

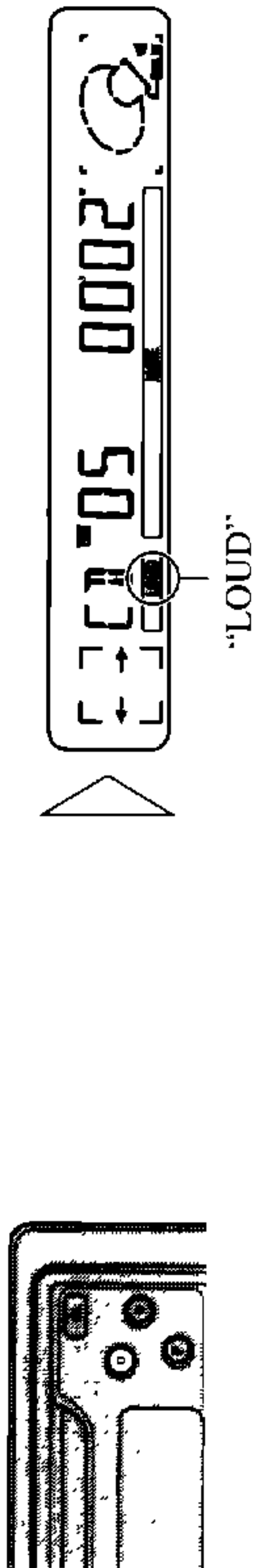
Note:

- If the (+) or (-) buttons are used to cancel the Attenuator mode, the sound will resume at a lower volume than before.

Loudness Adjustment

The Loudness function compensates for deficiencies in the low and high sound ranges at low volume.

- Switch the Loudness function ON.



To cancel the Loudness function, repeat the preceding operation.

Note:

- You can also switch the Loudness function ON/OFF in the Audio Menu.

Built-in CD Player Troubleshooting

Error Message

When problems occur with CD playback, an error message appears on the display. Refer to the table below to identify the problem, then take the suggested corrective action. If the error persists, contact your dealer or your nearest PIONEER Service Center.

Message	Possible cause	Recommended action
ERROR- 11, 12, 17, 30	Dirty disc.	Clean the disc.
ERROR- 11, 12, 17, 30	Scratched disc.	Replace the disc.
ERROR- 14	Unrecorded CD.	Check the disc.
ERROR- 10, 11, 12, 14, 17, 30, A0	Electrical or mechanical problem.	Turn the ignition ON and OFF, or switch to a different source, then back to the CD player.
HEAT	CD player overheating.	Discontinue play until the machine temperature drops.

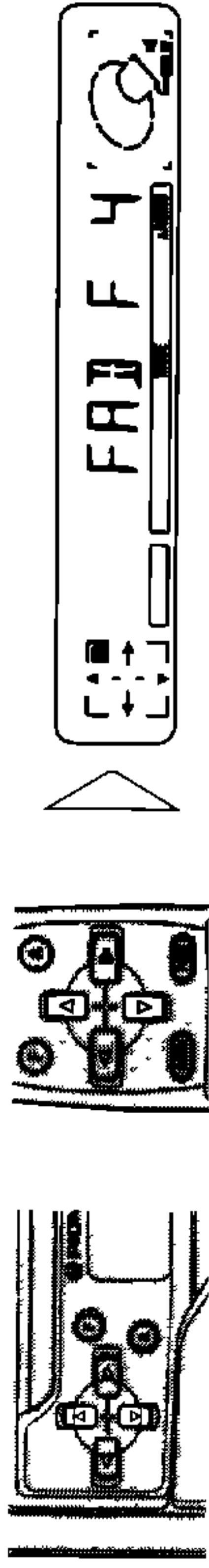


Balance Adjustment

This function allows you to select a Fader/Balance setting that provides ideal listening conditions in all occupied seats.

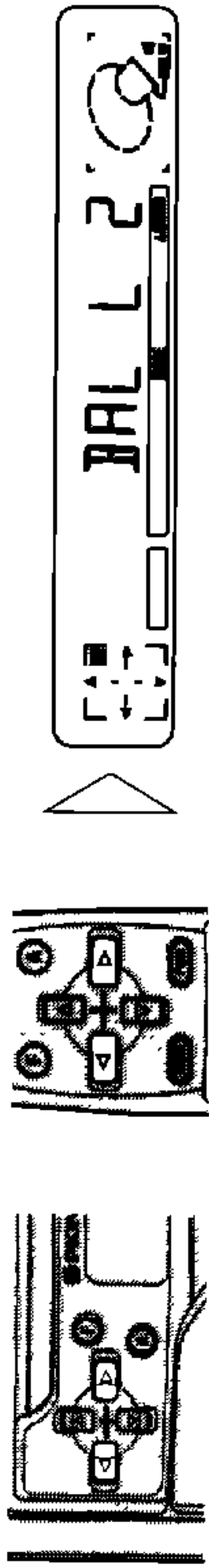
- 1. Select the Fader/Balance mode (FAD) in the Audio Menu.

- 2. Shift the balance progressively to the front or rear speakers.



“FAD F15” – “FAD R15” is displayed as it moves from front to rear.

- 3. Shift the balance to the left or right speaker, respectively.



“BAL L 9” – “BAL R 9” is displayed as it moves from left to right.

To cancel the Audio Menu, press the BAND button.

Note:

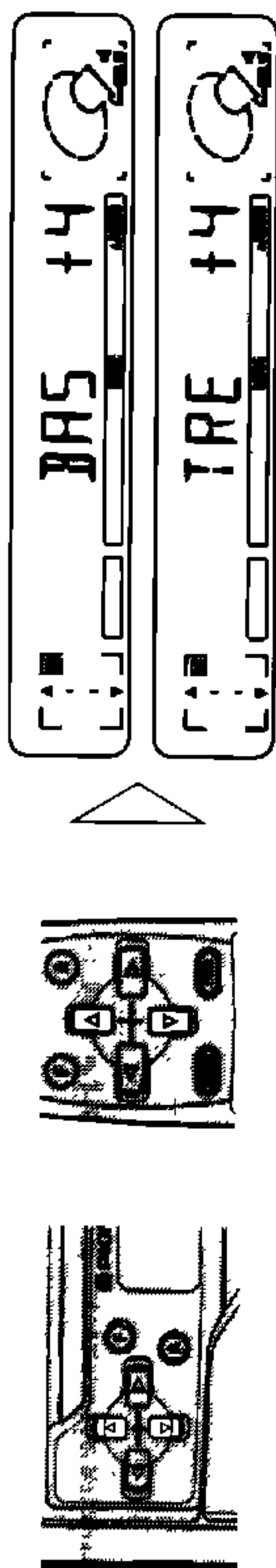
- “FAD 0” is the proper setting when 2 speakers are in use.

Bass/Treble Adjustment

This product is equipped with two tone adjustment modes, the Bass (BAS) and Treble (TRE) modes.

- 1. Select Bass mode (BAS) or Treble mode (TRE) in the Audio Menu.

- 2. Increase or decrease the intensity of the Bass or Treble, whichever is selected.



The display shows “+6” – “-6”.

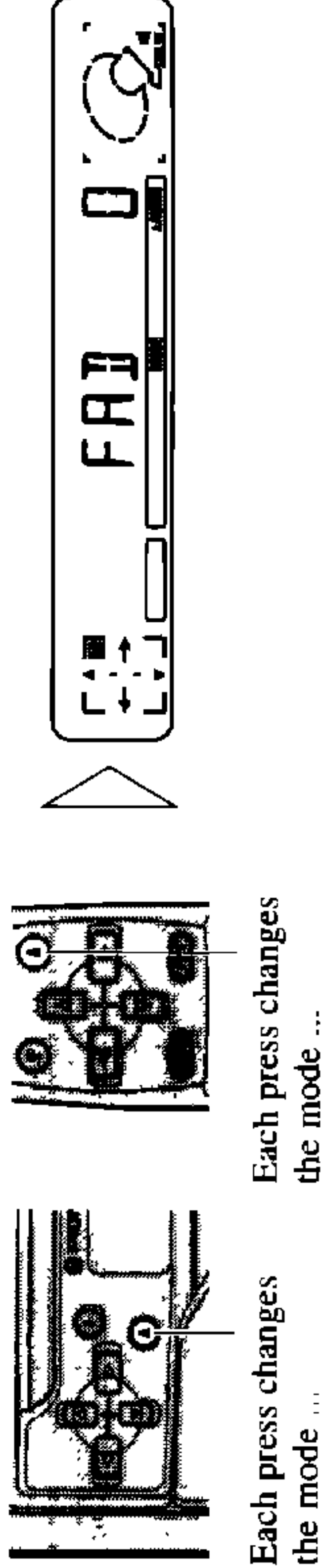
- 3. Repeat steps 1 – 2 above for the other Bass or Treble adjustment.

To cancel the Audio Menu, press the BAND button.

Entering the Audio Menu

In this menu, you can adjust sound quality parameters such as Fader/Balance, Bass/Treble, and Sub-woofer settings.

- Select the mode you want to adjust in Audio Menu.



Each press changes the mode ... Each press changes the mode ...

Each press of the AUDIO button selects the mode in the following order:

FAD → BAS → TRE → LOUD → SUB.W → 80HZ 0 → FIE

To cancel the Audio Menu, press the BAND button.

Note:

- You cannot select the SUB.W mode and 80Hz 0 mode (Sub-woofer setting mode) if the preout setting is switched to the Front output mode in the Initial Setting Menu. (See page 84.)
- You cannot select the 80Hz 0 mode (Sub-woofer setting mode) if Sub-woofer output is switched OFF in the SUB W mode. Initially, Sub-woofer output is ON.
- After entering the Audio Menu, if you do not perform an operation within 30 seconds, the Audio Menu is automatically canceled.



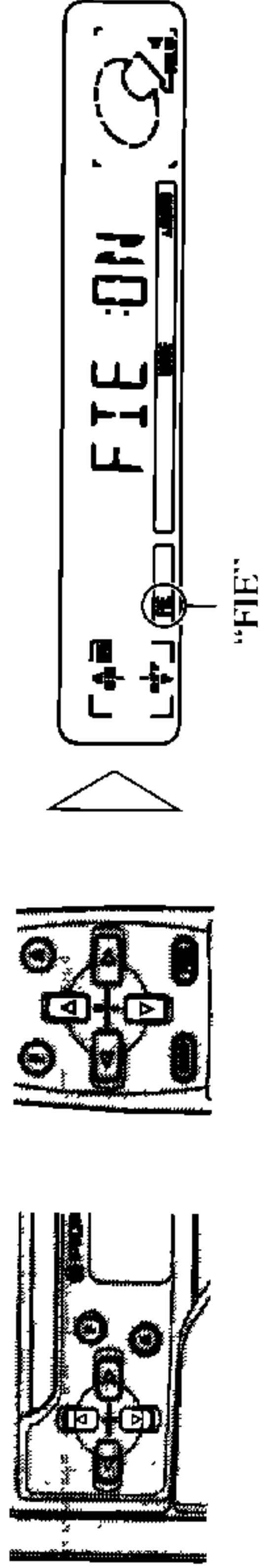
F.I.E. Function

The F.I.E. (Front Image Enhancer) function is a simple method of enhancing front imaging by cutting mid- and high-range frequency output from the rear speakers, limiting their output to low-range frequencies.

Precaution:

- When the F.I.E. function is deactivated, the rear speakers output sound in all frequencies, not only bass sounds. Reduce the volume before disengaging

1. Select the F.I.E. mode (FIE) in the Audio Menu.
2. Switch the F.I.E. function ON or OFF.



To cancel the Audio Menu, press the BAND button.

Note:

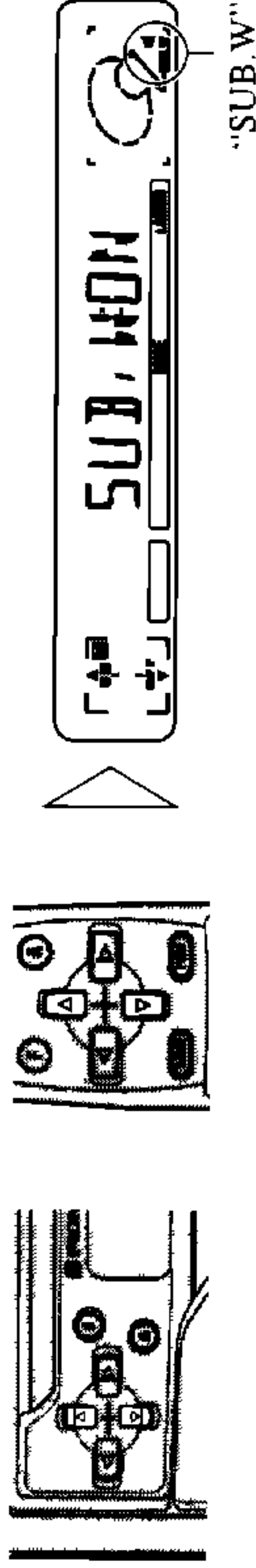
- After switching the F.I.E. function ON, select the FAD mode in the Audio Menu, and adjust front and rear speaker volume levels until they are balanced. (See page 81.)
- Switch the F.I.E. function OFF when using a 2-speaker system.

Sub-woofer Output

This product is equipped with a Sub-woofer output which can be switched ON or OFF. Initially, Sub-woofer output is ON.

1. Select the Sub-woofer ON/OFF mode (SUB.W) in the Audio Menu.

2. Switch the Sub-woofer output ON or OFF.



To cancel the Audio Menu, press the BAND button.

Note:

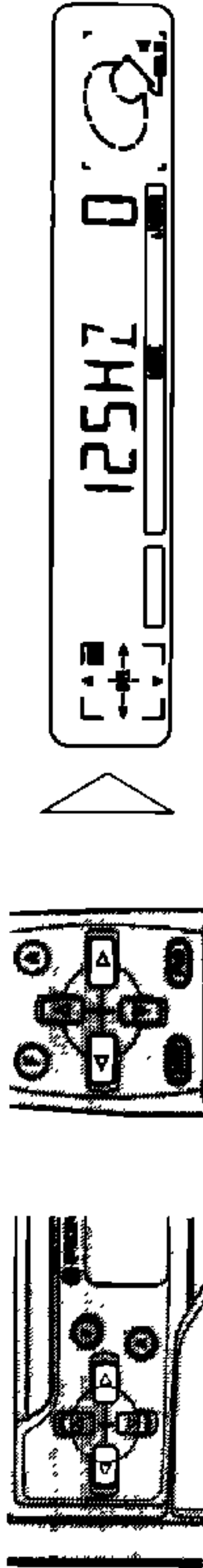
- You cannot select the SUB.W mode if the preout setting is switched to Front output mode in the Initial Setting Menu. (See page 84.)
- Select the OFF setting when you do not want the Sub-woofer to operate.

Sub-woofer Setting Adjustment

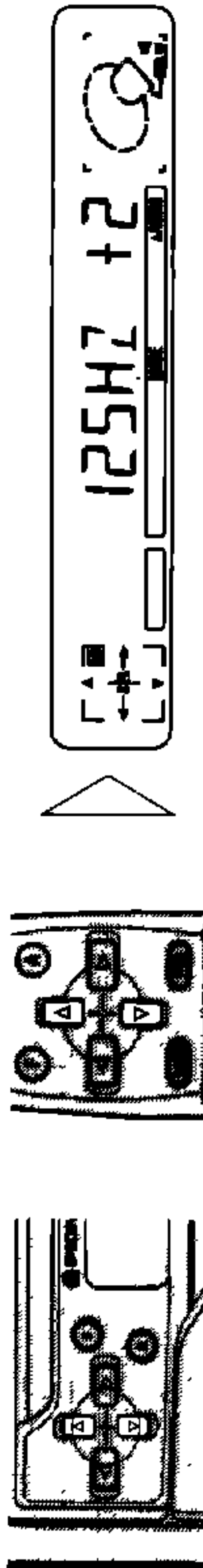
When the Sub-woofer output is ON, you can adjust the cut-off frequency and the output level of Sub-woofer.

1. Select the Sub-woofer setting mode (80HZ 0) in the Audio Menu.

2. Select the frequency to 50 Hz, 80 Hz or 125 Hz.



3. Increase or decrease the output level.



The display shows "+6" - "-6".

To cancel the Audio Menu, press the BAND button.

Note:

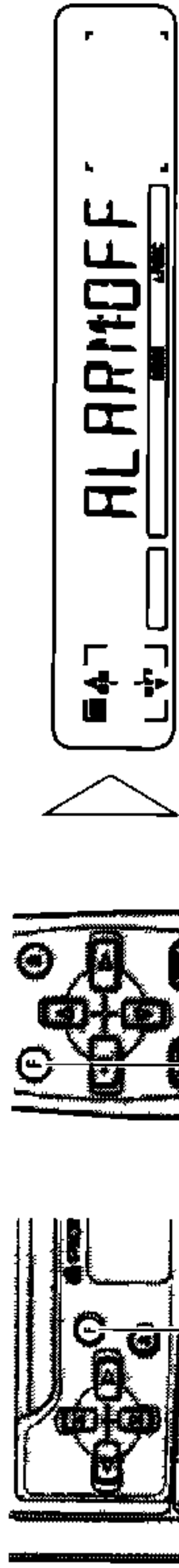
- You cannot select the 80Hz 0 mode (Sub-woofer setting mode) if Sub-woofer output is switched OFF in the SUB.W mode.



Entering the Initial Setting Menu

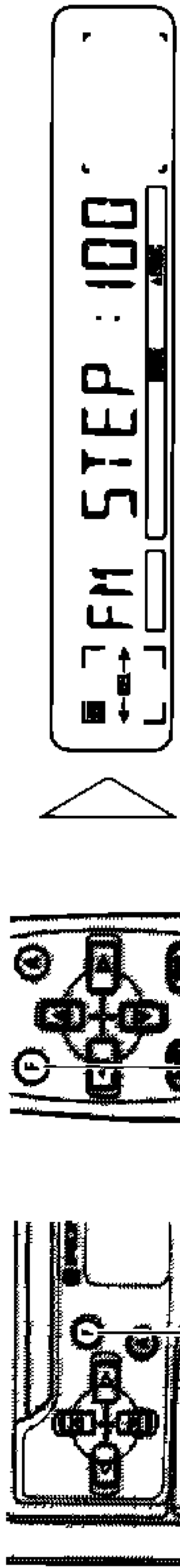
With this menu, you can perform initial settings for the unit.

- 1. Switch the sources OFF.
- 2. Enter the Initial Setting Menu with the sources OFF.



Hold for 2 seconds

- 3. Select the desired mode.



Each press changes the mode ...

Each press of the FUNCTION button selects the mode in the following order:

ALARM → FM STEP → AM STEP → WARN → P/OUT → DIM

To cancel the Initial Setting Menu, press the BAND button.

Note:

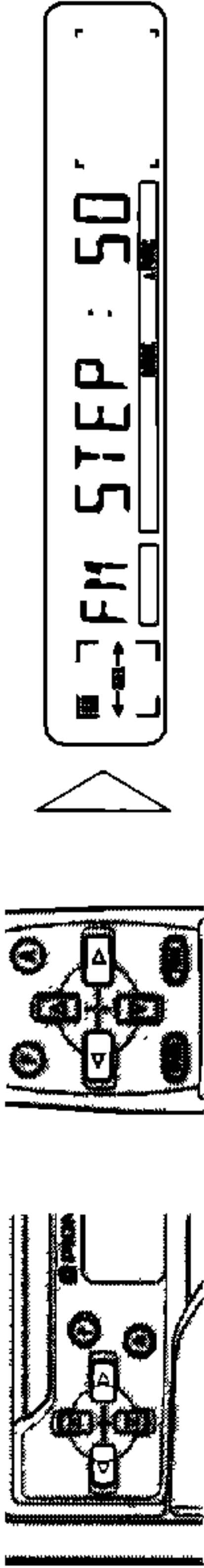
- ALARM is a new feature "Detachable Face Security Alarm". Refer to "DFS Alarm Function" for details and instructions on how to use this function.
- Holding down the FUNCTION button for 2 seconds also cancels the Initial Setting Menu.

Setting the FM Tuning Step

The tuning step employed by Seek Tuning in the FM mode can be switched between 100 kHz (preset at the factory) and 50 kHz.

- 1. Select the FM tuning step mode (FM STEP) in the Initial Setting Menu.

- 2. Select the desired tuning step.



To cancel the Initial Setting Menu, press the BAND button.

Note:

- If Seek Tuning is performed in 50 kHz steps, stations may be tuned in imprecisely. Tune in the stations with Manual Tuning or use Seek Tuning again.

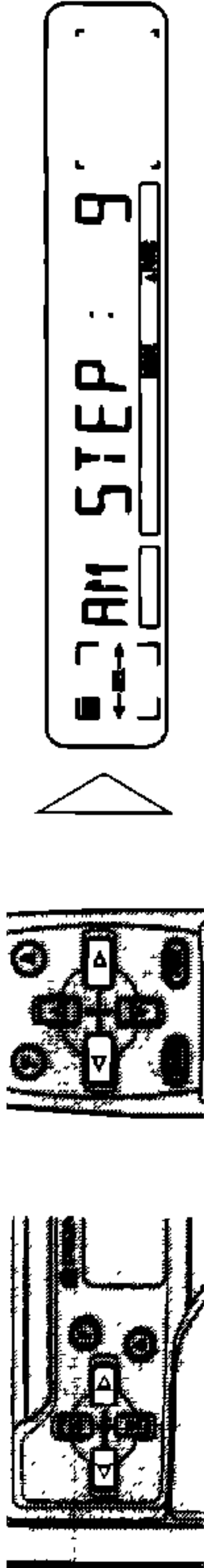
Setting the AM Tuning Step

The tuning step employed in the tuner's AM band can be switched between 9 kHz and 10 kHz per step. Reset the tuning step from 9 kHz (the factory preset step) to 10 kHz when using the tuner in North, Central or South America.

Specifications	Initial Setting	New Setting
Tuning Steps	9 kHz	10 kHz
Frequency range	531 – 1,602 kHz	530 – 1,710 kHz

- 1. Select the AM tuning step mode (AM STEP) in the Initial Setting Menu.

- 2. Select the desired step.



To cancel the Initial Setting Menu, press the BAND button.

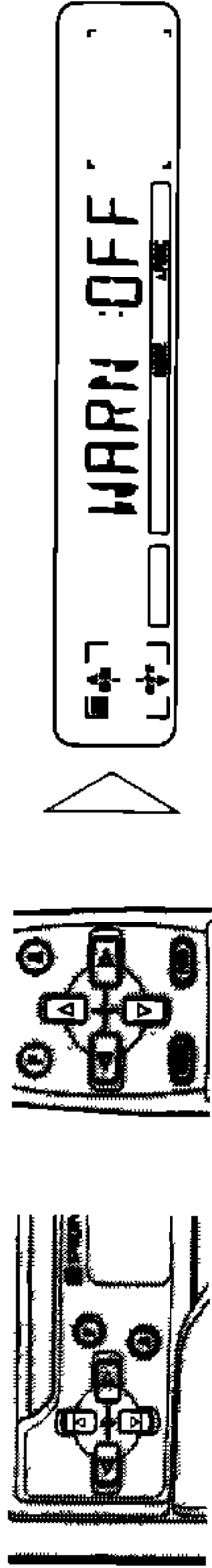


Initial Setting

Setting the Warning Tone

You can switch the Warning Tone function ON/OFF.

- 1. Select the Warning Tone mode (WARN) in the Initial Setting Menu.
- 2. Switch the Warning Tone ON or OFF.

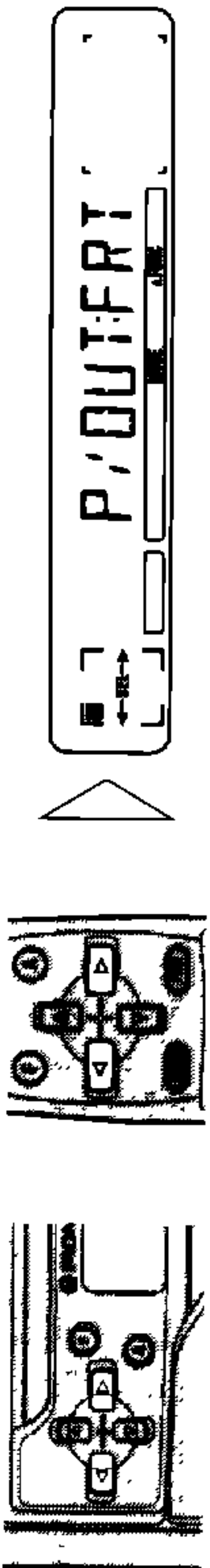


To cancel the Initial Setting Menu, press the BAND button.

Setting Preout Output

This product is equipped with two Preout outputs. One is for Rear output. The other can be used for Sub-woofer or Front output. Initially, it is set for Sub-woofer output. When connecting a front speaker to this output, set for Front output.

- 1. Select the Preout Output Setting mode (P/OUT) in the Initial Setting Menu.
- 2. Select your desired Preout output type.

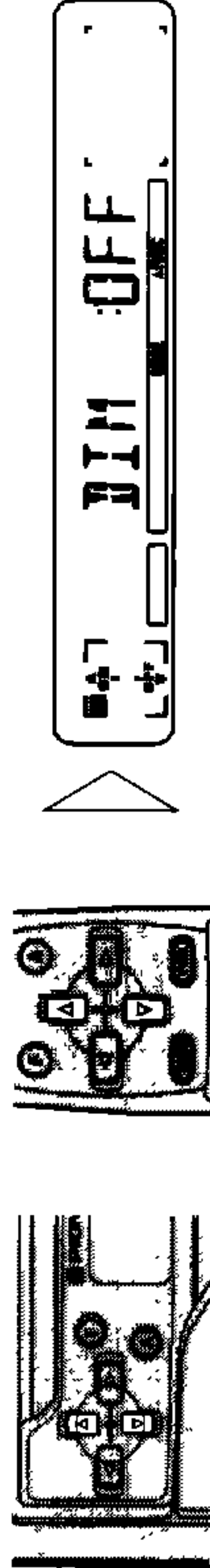


To cancel the Initial Setting Menu, press the BAND button.

Setting the Dimmer

To prevent this display becoming too bright at night, it is automatically dimmed when you switch on your vehicle's headlights. You can switch the dimmer ON/OFF.

- 1. Select the Dimmer mode (DIM) in the Initial Setting Menu.
- 2. Switch the Dimmer ON or OFF.



To cancel the Initial Setting Menu, press the BAND button.

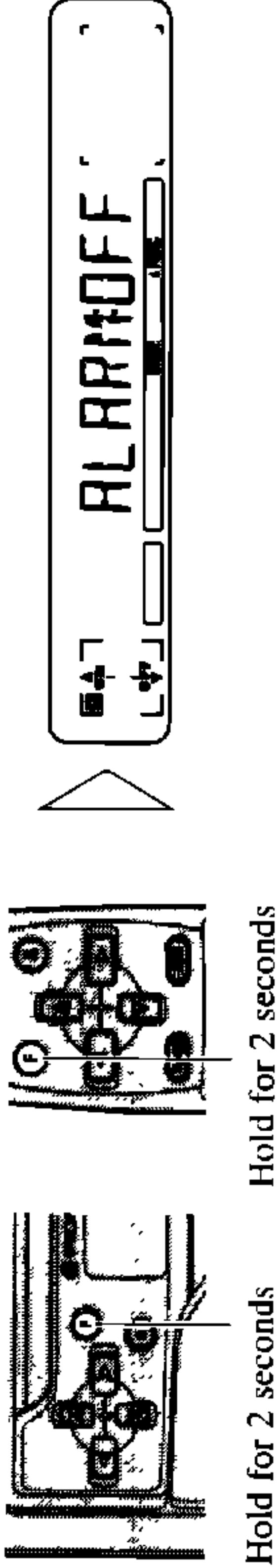


In addition to the Detachable Face Security, Pioneer has incorporated a new feature **"Detachable Face Security Alarm"**. This feature is designed to protect your new Pioneer car stereo as well as your vehicle contents.

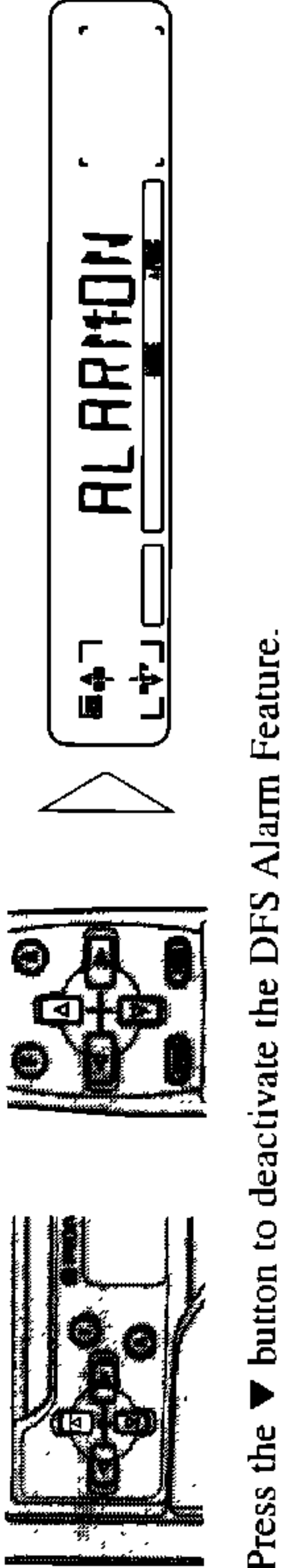
Activating the DFS Alarm Feature

Pioneer has developed a menu display that allows you to set-up your DFS Alarm to meet your personal needs. By scrolling through this menu it is possible to select your own "Entry Delay Time", "Speaker Output Volume", "Selectable Output", "Door System Type", "Ignition Key Disarm" and "Remote Disarm". Initially from the factory the DFS Alarm feature is not activated.

1. Select the DFS Alarm Feature ON/OFF mode with the sources OFF.

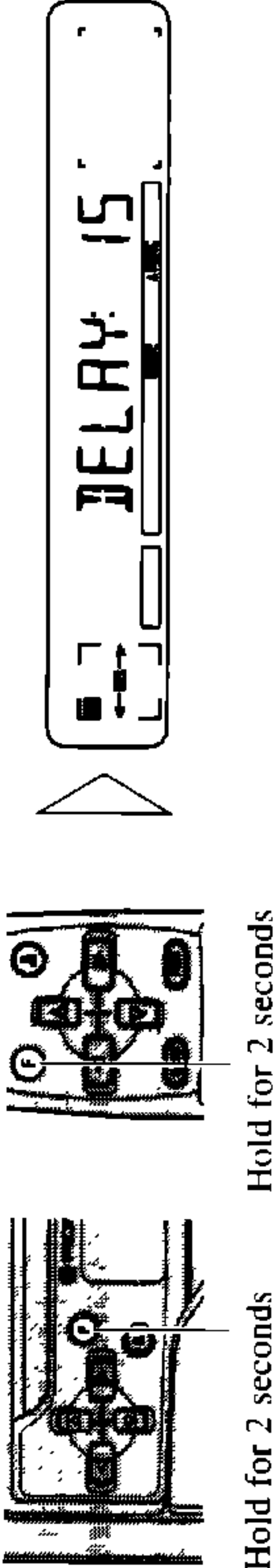


2. Activate the DFS Alarm Feature.



Press the ▼ button to deactivate the DFS Alarm Feature.

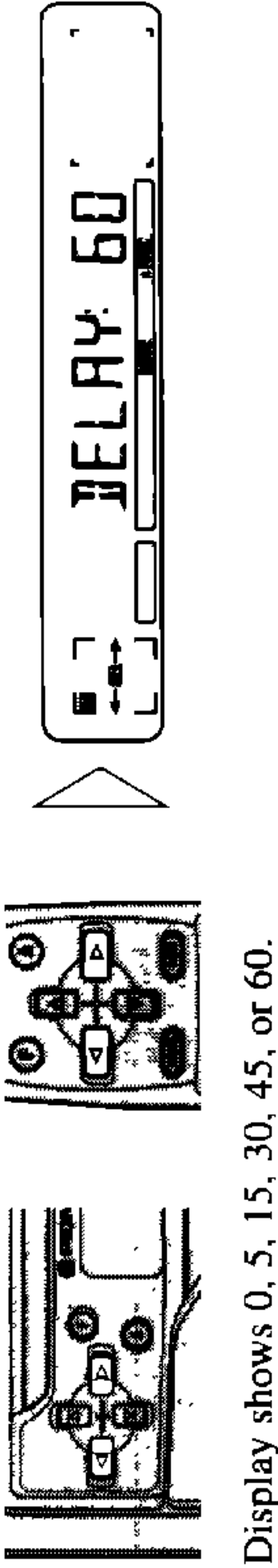
3. Enter the DFS Alarm Setting Menu.



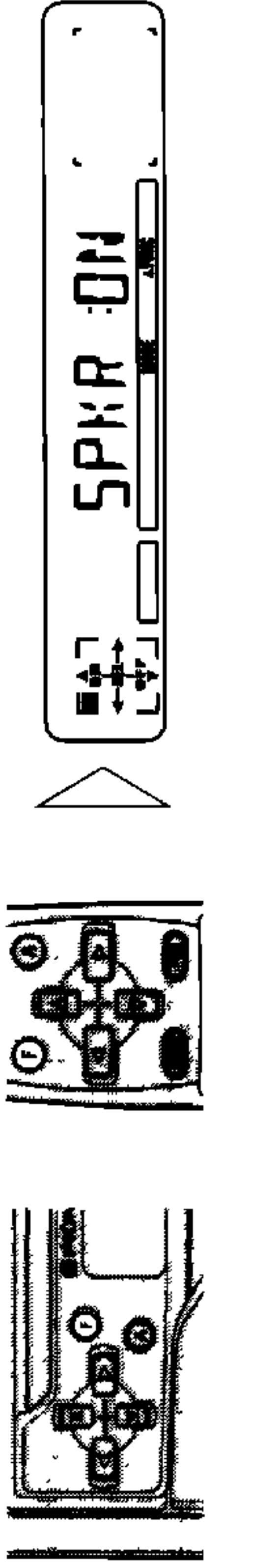
Setting Entry Delay Time

Initially the "Entry Delay Time" is set to 15 seconds. The "Entry Delay Time" can be adjusted to be 0, 5, 15, 30, 45 or 60 seconds.

1. Decrease or increase the "Entry Delay Time".



2. Advance to next selection.



Activating Internal Speaker ON/ OFF

This feature allows you to select whether or not the speaker output is sounded when the "DFS Alarm" is triggered. Initially from the factory the speaker output is activated. Toggling between ▲, ▼ buttons allows you to deactivate or activate the "Internal Speaker". If you switch the speaker output OFF, you can not change the "TEST MODE".

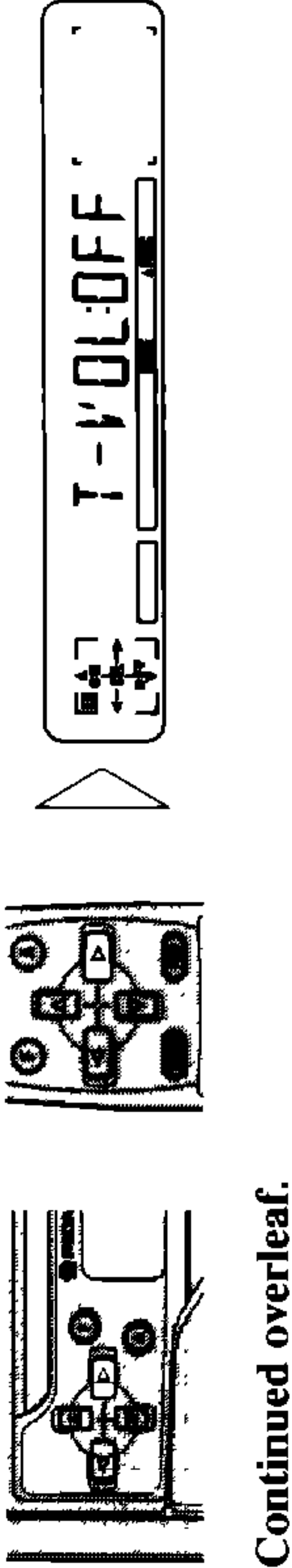
Speaker Volume Output Adjustment

If the "Internal Speaker Output" has been selected then it is possible to adjust the volume of the speaker output for when the Alarm is triggered. To adjust the volume you must engage the "TEST MODE".

Note:

- If the "Internal Speaker Output" is turned OFF, then this menu will not appear.

1. Engage the "TEST MODE".



Continued overleaf.

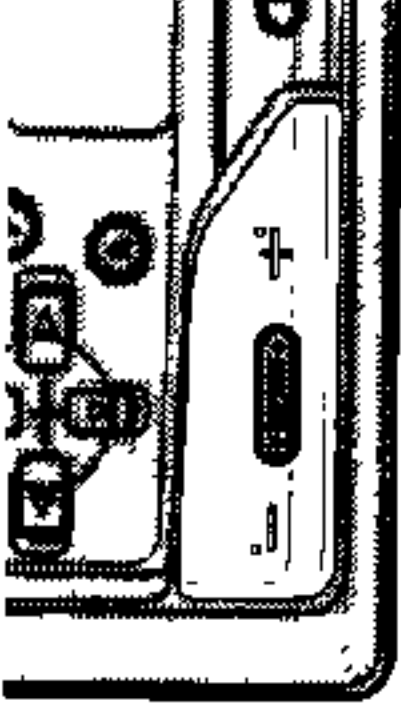


2. Activate the "TEST MODE".



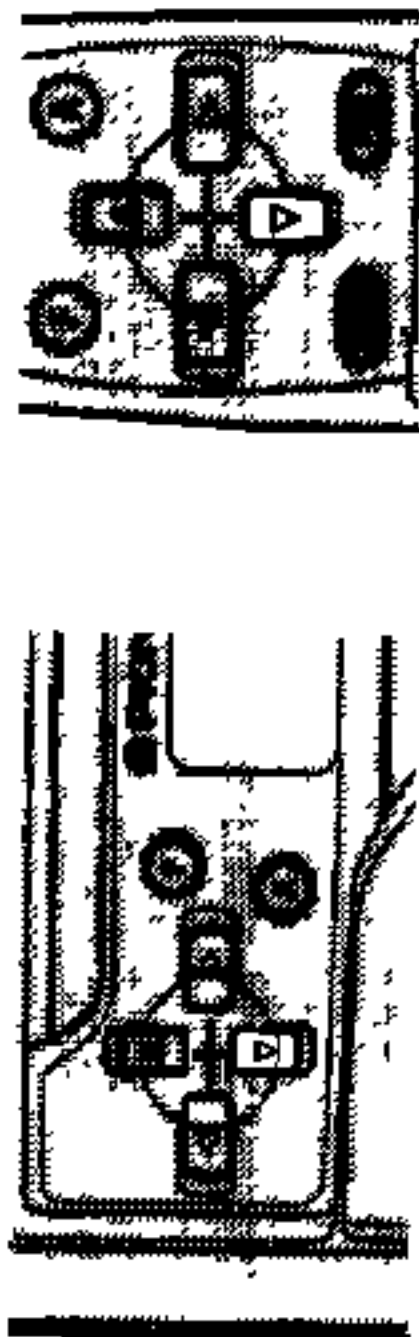
In this mode the speakers will sound.

3. Decrease or increase the volume.



Display shows 10 – 30.

4. After selecting your preferred volume setting, deactivate the "TEST MODE".



5. Cancel the "TEST MODE".



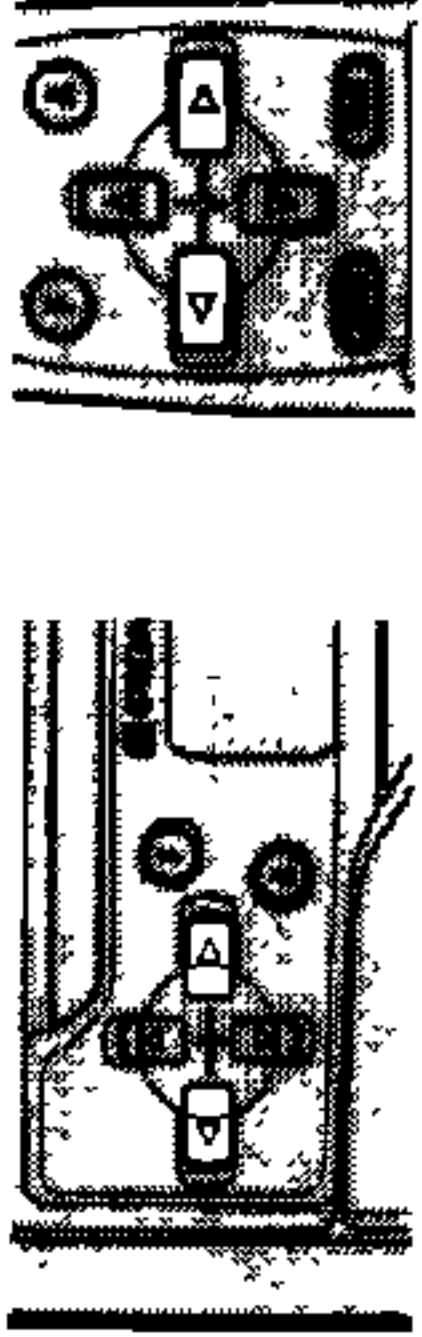
6. Advance to next selection.



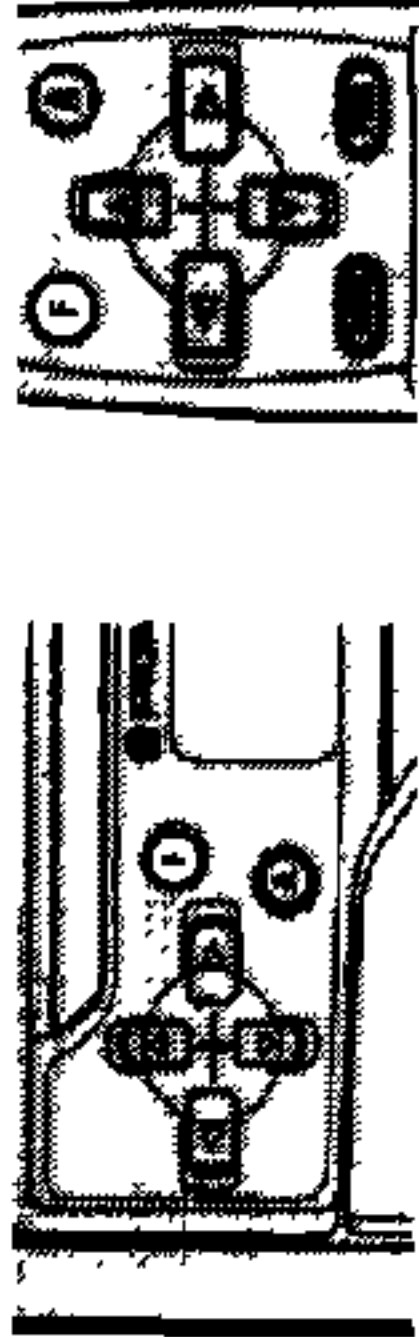
## Setting the Selectable Output (Pulse/Constant)

This mode enables you to select a "Constant" output or "Pulsed" output. When connecting a Siren the "Constant" output should be selected. When connecting the horn or lights the "Pulsed" output should be selected.

1. Select your desired output type.



2. Advance to next selection.



## Selecting Door Switching Systems

It is necessary to select the correct "Door System Type" (Negative or Positive switching) for that of your vehicle. Initially, the system is set for vehicles with the grounding type (Negative switching).

Select the correct "Door system type" of your vehicle from below.

■ Vehicles to select "DR-L:CLS"

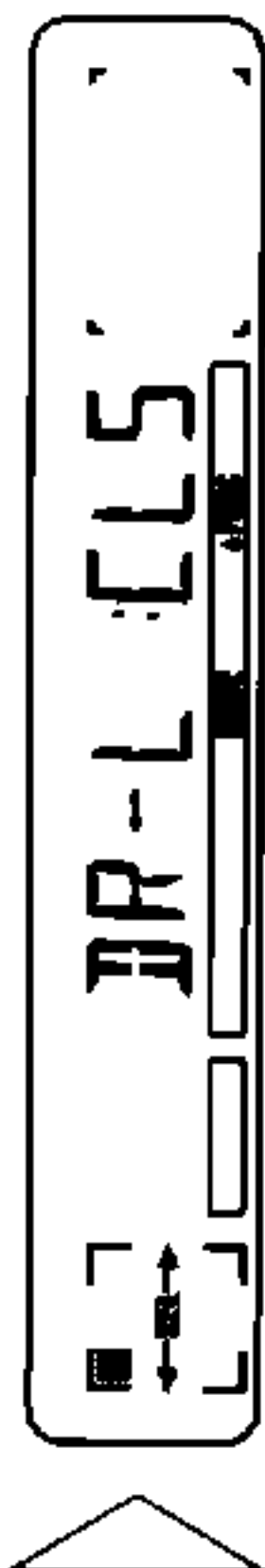
GM, CHRYSLER, JAPANESE, EUROPEAN

■ Vehicles to select "DR-H:CLS"

FORD, JAGUAR, MERCEDES\*, etc.

\* Some Models Only.

• Select "DR-L:CLS" or "DR-H:CLS" for the correct door system type.

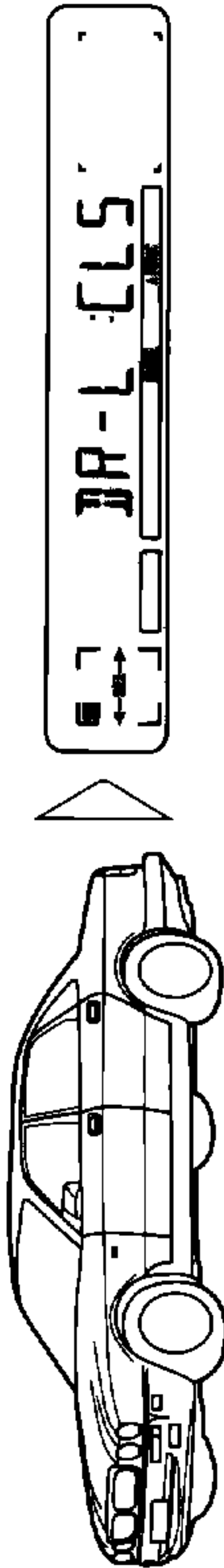




## ■ Door System Confirmation

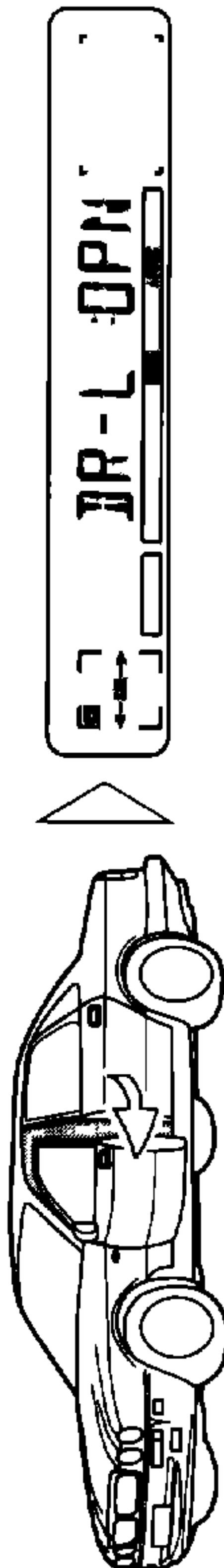
The door system confirmation feature was incorporated to ensure that the correct door system type has been selected. (eg. Set to "DR-L:CLS" for GM vehicles.)

1. First, close all the doors. If the correct door system type has been selected then the Display will show "DR-L:CLS".

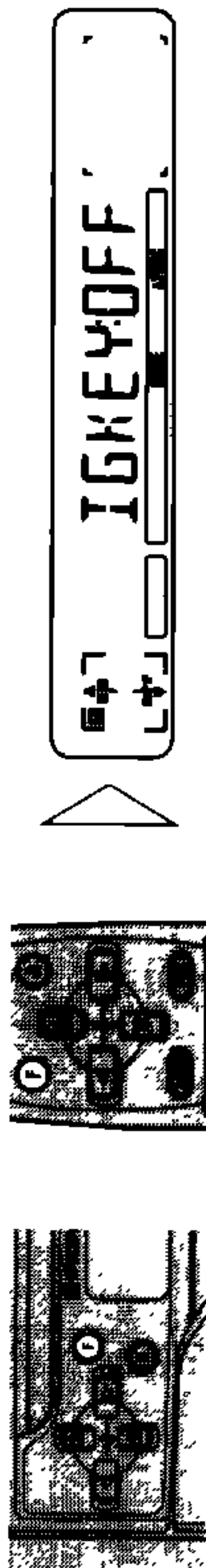


If not, select the alternative door system type by pressing the ◀ or ▶ button. Lastly, confirm each door triggers the Alarm by opening and closing each door.

2. As the door is opened the display should change accordingly ("DR-L:CLS" – "DR-L:OPN").



3. Advance to next selection.



## Ignition Key Disarm

You can disarm "DFS Alarm" with the ignition key if you have forgotten the Detachable face panel.

The method for disarming "DFS Alarm" with the ignition key differs depending on whether this function is switched ON or OFF.

### ■ If this function is "ON" or "OFF":

The "DFS Alarm" can be disarmed if the Detach face is reattached within the "Entry Delay Time".

### ■ If this function is "ON":

The "DFS Alarm" can be disarmed if the ignition key is inserted in the ignition within the "Entry Delay Time"; then the key is turned from "OFF" to "ON" 5 times within 1 minute.

### ■ If this function is "OFF":

The "DFS Alarm" can be disarmed if the ignition key is inserted in the ignition and turned from "OFF" position to the "ON" within the "Entry Delay Time".

1. Switch the Ignition Key Disarm ON or OFF.



2. Advance to next selection.





DFS Alarm Function

Central Door Lock Systems

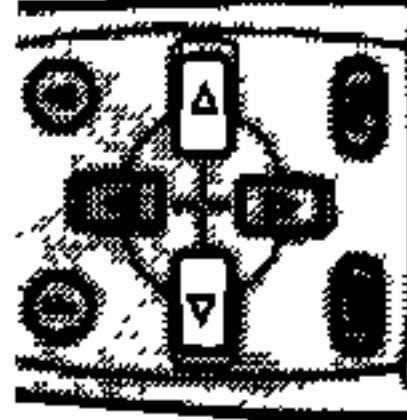
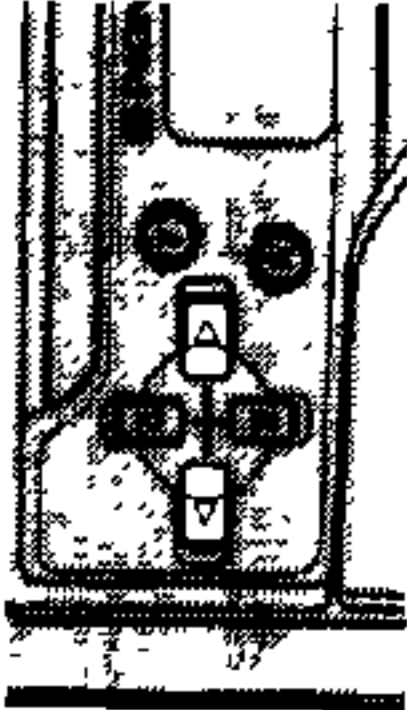
The DFS Alarm can be disarmed by Un-Locking the doors with a remote key-less entry system. If the unit's stand-by state is disarmed, the LED's blinking speed becomes faster. (It can be understood if the "DFS Alarm" has been disarmed by the change in the LED's blinking speed.)

Note:

- If the "DFS Alarm" is disarmed by the key-less entry system, it will remain disarmed. To reset, turn the ignition on reattach the face then turn the ignition to the off position and remove the detachable face.
- If your vehicle is equipped with a central door lock but the glass or shock sensor is not connected, if the window is broken and the central door lock is released, this unit's DFS Alarm will not operate.
- Pioneer recommends that both a shock sensor and glass sensor be installed when you are using the "Remote Disarming" feature.

Selecting the Door Lock Type

- Select the "LCK-L:CLS" or "LCK-H:CLS" for the correct door lock type.



Door Lock Confirmation

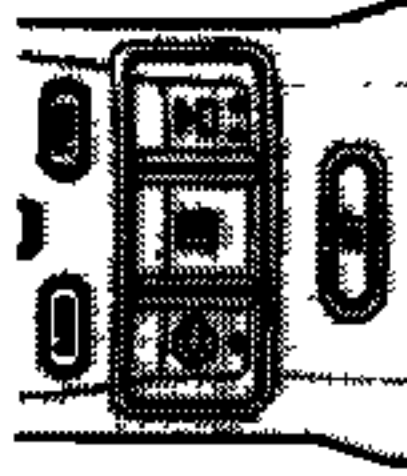
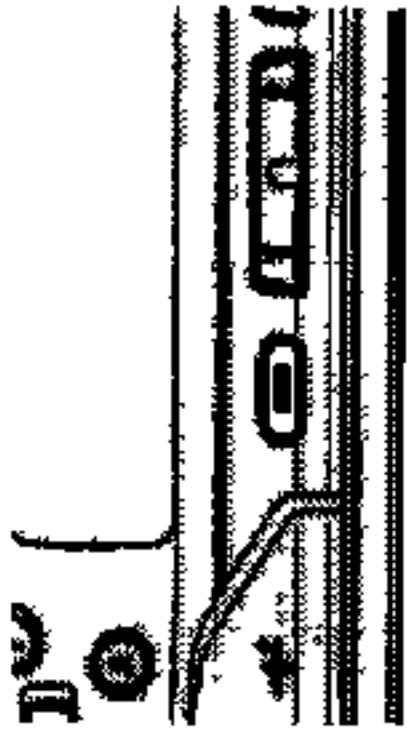
The door lock confirmation feature was incorporated to ensure that the correct door lock type has been selected. (eg. Set to "LCK-L:CLS".)

1. As the doors are unlocked with central door lock system the display should flash "LCK-L:OPN" accordingly.



If not, select the alternative door lock type by pressing the ◀ or ▶ button.

2. Cancel the DFS Alarm Setting Menu.



Setting of the "DFS Alarm" is now complete.

Note:

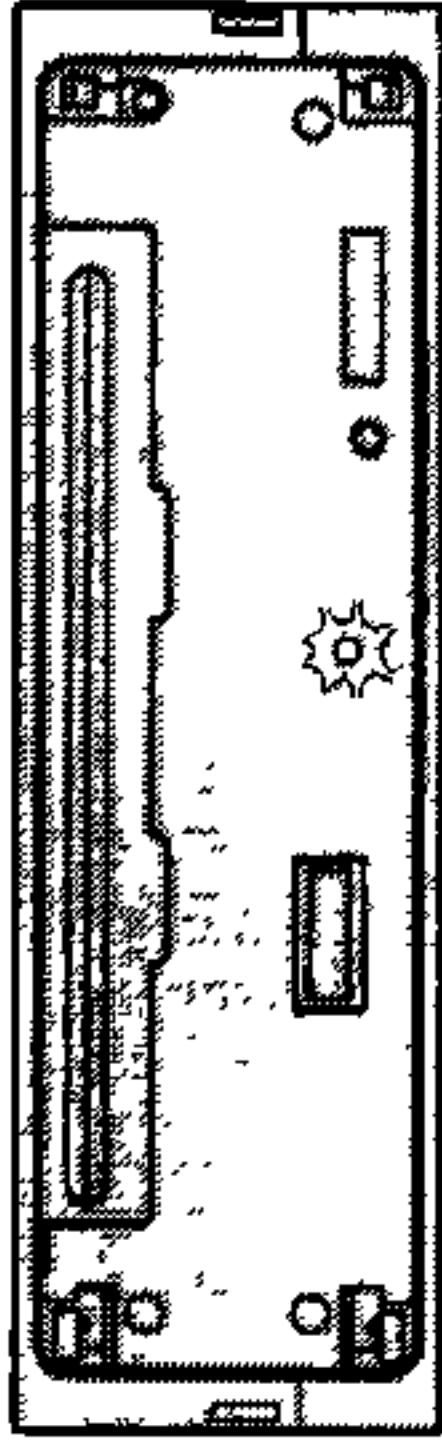
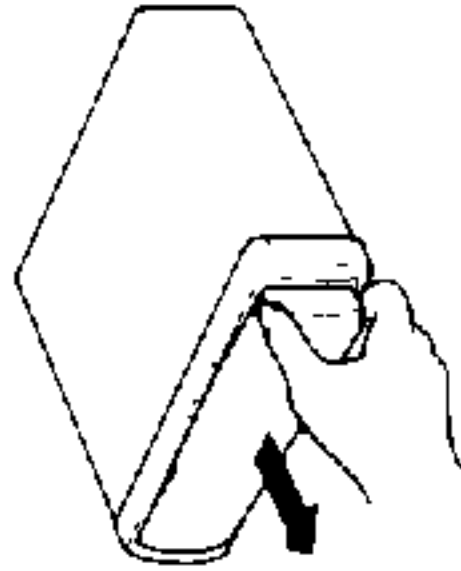
- In the case that the battery is disconnected it may be necessary to reprogram the DFS Alarm Menu; otherwise this setting needs to be done only once.

Operation of "DFS Alarm"

Providing the installation and setting of the "DFS Alarm Setting Menu" has been performed correctly, operation of the "DFS Alarm" is very simple.

Arming Alarm

To arm your Alarm simply turn off the ignition and detach the front panel, as described on page 26. After detaching the front panel the "DFS Alarm" will automatically arm itself after 30 seconds, providing all of the doors are closed. If after 30 seconds, a door still remains open the DFS Alarm will not arm until the last door has been closed. After closing all of the doors, ensure that they are securely locked. The LED indicator on the head unit will flash as a visual deterrent. Your vehicle is now protected by your "DFS Alarm".





### Time Display/Setting

#### ■ Displaying the Time

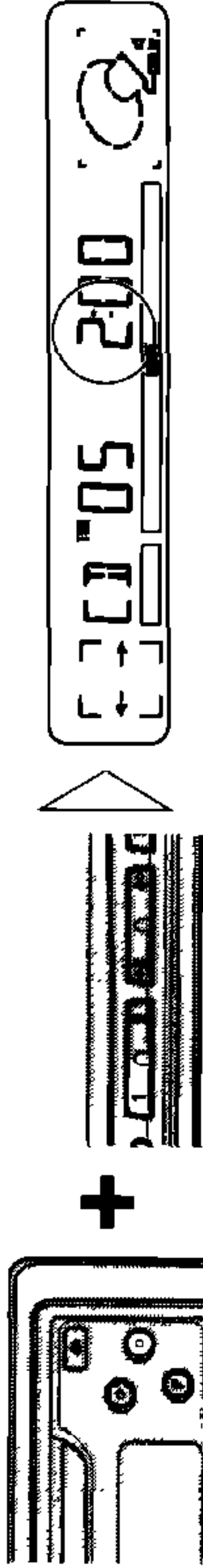
- To turn the time display ON with the source ON.



The time display disappears temporarily when you perform another operation, but the time indication returns to the display after 25 seconds.

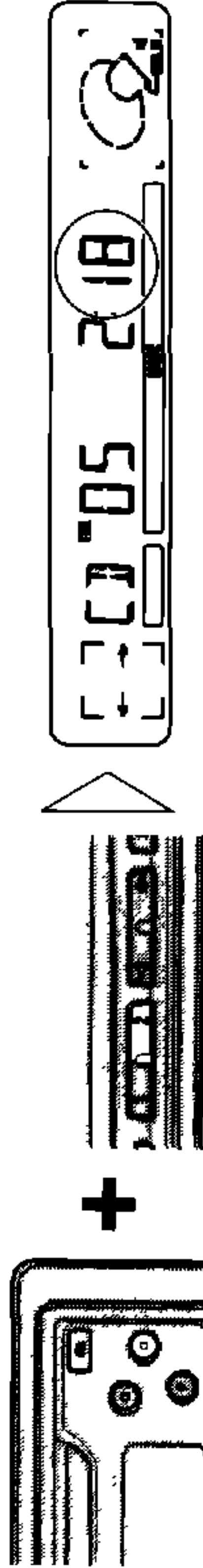
#### ■ Setting the Hours

- While holding down the CLOCK button, press button 1 to set the hour.



#### ■ Setting the Minutes

- While holding down the CLOCK button, press button 2 to set the minute.



When you release the CLOCK button, the second count begins from 00 seconds.

#### Note:

- The hour and minute can be advanced by pressing the respective buttons either consecutively or continuously.

### Disarming Alarm

Upon entering your vehicle, and within the "Entry Delay Time" set within the "DFS Alarm Menu", attach your Pioneer Detachable Face.

#### ■ If you have forgotten the Detachable Face Panel:

If the "Ignition Key Disarm" is "ON", insert the ignition key in the ignition within the "Entry Delay Time", then turn the key from "OFF" to "ON" 5 times within 1 minute.  
If the "Ignition Key Disarm" is "OFF", insert the ignition key in the ignition and turn the key from "OFF" to "ON" within the "Entry Delay Time".

### Entry Detection

If the "DFS Alarm" was not disarmed in accordance with "Disarming Alarm", the "DFS Alarm" will be triggered. The "DFS Alarm" will sound for 60 seconds and will repeat 5 times if any door is left open or reopened. After the fifth time the "DFS Alarm" will reset to prevent continuous sounding and prevent your battery from discharging.

#### Precaution:

- Upon returning to your vehicle and before opening any doors, check to see if the LED indicator is still flashing. If the LED is no longer flashing, it indicates that the Alarm as sounded. Disarming, as described above, is still necessary.



Other Functions

■ Synchronizing with the Time Announcement

- While holding down the CLOCK button, press button 3 to reset the minute and second indications to zero.

Example: When synchronizing between 1:30 and 2:29.





● **DEH-636**

## Specifications

# General

Power source .....	14.4 V DC (10.8 – 15.1 V allowable)
Grounding system .....	Negative type
Max. current consumption .....	10.0 A
<b>Dimensions</b>	
(DIN) (chassis) ...	178 (W) × 50 (H) × 150 (D) mm
(nose) .....	188 (W) × 58 (H) × 20 (D) mm
(D) (chassis) ...	178 (W) × 50 (H) × 155 (D) mm
(nose) .....	170 (W) × 48 (H) × 15 (D) mm
Weight .....	1.4 kg

# AM tuner

Frequency range .....	531 – 1,602 kHz (9 kHz)
	530 – 1,710 kHz (10 kHz)
Usable sensitivity .....	18 $\mu$ V (25 dB) (S/N: 20 dB)
Selectivity .....	50 dB ( $\pm$ 9 kHz)
	50 dB ( $\pm$ 10 kHz)

# Amplifier

Continuous power output is 20 W per channel min. into 4 ohms, both channels driven 50 to 15,000 Hz with no more than 5% THD.	
Maximum power output .....	40 W $\times$ 4
Continuous power output .....	20 W $\times$ 4 (1% dist. at 1 kHz)
Load impedance .....	4 $\Omega$ (4 – 8 $\Omega$ allowable)
Preout output level/output impedance .....	500 mV/1 k $\Omega$
Tone controls	
(Bass) .....	$\pm$ 12 dB (100 Hz)
(Treble) .....	$\pm$ 12 dB (10 kHz)
Loudness contour .....	+10 dB (100 Hz), +7 dB (10 kHz)
	(volume: –30 dB)

## CD player

System .....	Compact disc audio system
Usable discs .....	Compact disc
Signal format .....	Sampling frequency: 44.1 kHz
	Number of quantization bits: 16; linear
Frequency characteristics .....	5 – 20,000 Hz ( $\pm 1$ dB)
Signal-to-noise ratio .....	94 dB (1 kHz)(IEC-A network)
Dynamic range .....	90 dB (1 kHz)
Number of channels .....	2 (stereo)

● **DEH-536**

## Specifications

# General

Power source .....	14.4 V DC (10.8 – 15.1 V allowable)
Grounding system .....	Negative type
Max. current consumption .....	10.0 A
<b>Dimensions</b>	
(DIN) (chassis) ....	178 (W) × 50 (H) × 150 (D) mm
(nose) .....	188 (W) × 58 (H) × 20 (D) mm
(D) (chassis) ....	178 (W) × 50 (H) × 155 (D) mm
(nose) .....	170 (W) × 48 (H) × 15 (D) mm
Weight .....	1.4 kg

## AM tuner

Frequency range	... 531 – 1,602 kHz (9 kHz)
	530 – 1,710 kHz (10 kHz)
Usable sensitivity	18 $\mu$ V (25 dB) (S/N: 20 dB)
Selectivity	50 dB ( $\pm$ 9 kHz)
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Tone controls	
(Bass) .....	$\pm$ 12 dB (100 Hz)
(Treble) .....	$\pm$ 12 dB (10 kHz)
Loudness contour .....	+10 dB (100 Hz), +7 dB (10 kHz) (volume: –30 dB)

## CD player

System .....	Compact disc audio system
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	Number of quantization bits: 16; linear
Frequency characteristics .....	5 – 20,000 Hz ( $\pm 1$ dB)
Signal-to-noise ratio .....	94 dB (1 kHz)(IEC-A network)
Dynamic range .....	90 dB (1 kHz)
Number of channels .....	2 (stereo)



# Service Manual

ORDER NO.  
**CRT1829**

CD MECHANISM MODULE

# CX-597

- This service manual describes the operation of the CD mechanism incorporated in models listed in the table below.
- When performing repairs use this manual together with the specific manual for model under repair.

Model	Service Manual	CD Mechanism Module	CD Mechanism Unit
DEH-P825R/EW, DEH-P825/UC DEH-P823/ES, DEX-P99/UC	CRT1805	CXK5011	CXA8880
DEH-P725R/EW, DEH-P725R-W/EW DEH-P725/UC, DEH-P725-W/UC DEH-P723/ES, DEH-P625/UC DEX-P88/UC, DEX-P77R/EW	CRT1812	CXK5001	CXA8870
DEH-625R/EW, DEH-624R/EW DEH-525R/EW, DEH-524R/EW DEH-424R/GR, DEH-424/EW DEH-425/IT	CRT1808	CXK5001	CXA8870
DEH-59/UC, DEH-52/UC DEH-525/UC, DEH-49/UC DEH-42/UC, DEH-425/UC DEH-225/UC, DEH-523/ES DEH-323/ES, DEH-223/ES	CRT1809	CXK5001	CXA8870

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2. THE SUMMARY OF STRUCTURE . . . . . 15
3. DISASSEMBLY AND ASSEMBLY . . . . . 17

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**PIONEER ELECTRONICS ASIACENTRE PTE.LTD.** 501 Orchard Road, #10-00, Lane Crawford Place, Singapore 0923

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# 1. THE SUMMARY OF CIRCUITS

## 1.1 PRE-AMP SECTION (UPC2572GS: IC101)

This section processes the pickup output signals to create the signals for the servo, demodulator & control.

The pickup output signals are I-V converted by the pre-amp with built in photo-detector in the pickup, and added by the RF amp (IC101) to obtain the RF, FE, TE, TE zero cross, and other signals.

The main component is the UPC2572GS and each section is explained below. Because this system has a single power supply (+5V), the reference voltage for this IC, the PU and the servo circuit is the voltage REFO (+2.5V). The REFO signal is obtained by buffering REFOUT from the servo LSI (IC201: UPD63702GF) and is available from Pin 19 of IC101. All measurements should be done using this REFO as reference.

Note: During measurement, do not short REFO and GND.

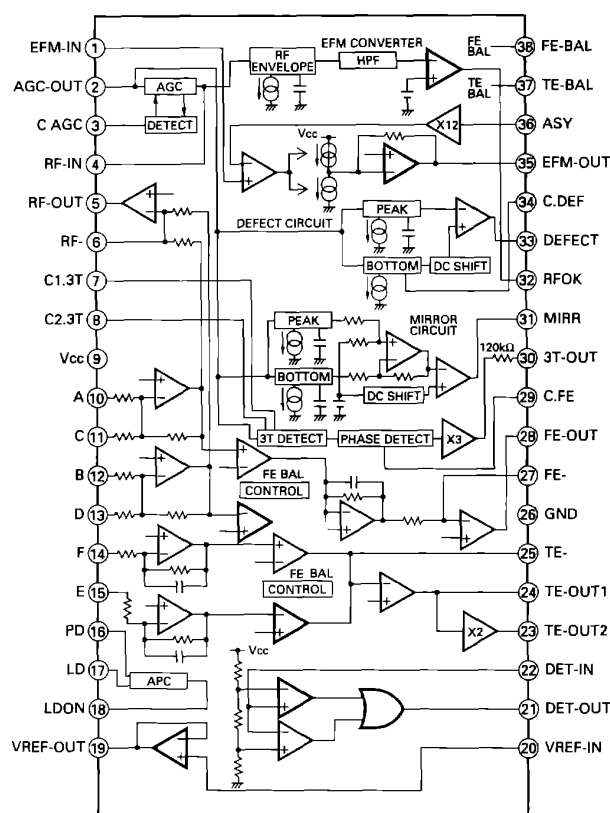


Fig.1 : UPC2572GS BLOCK DIAGRAM

### 1) APC Circuit (Automatic Power Control)

When the laser diode is driven with constant current, the optical output has large negative temperature characteristics. So the current must be controlled to hold the output constant with the monitor diode. The circuit that carries out this function is the APC circuit. The LD current is obtained by measuring the voltage between LD1 and ground and the value of this current is about 35mA.

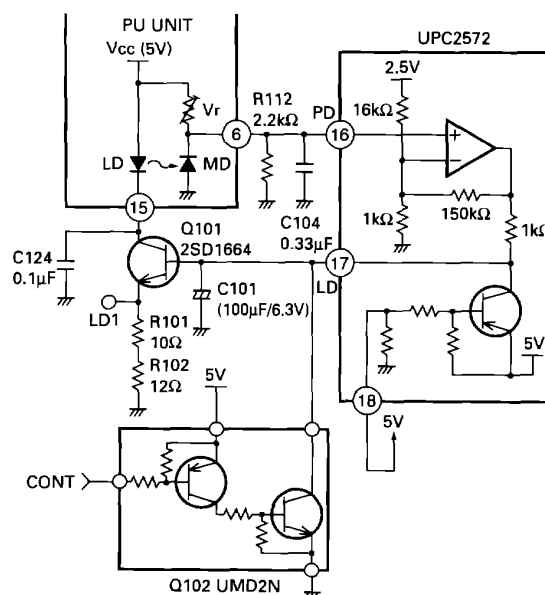


Fig.2 : APC CIRCUIT



## 2) RF Amp, RF AGC Amp

The photo-detector outputs (A+C) and (B+D) are added, amplified, and equalized in IC101 and output to the RFI pin. (The eye pattern can be checked at this pin.)

The RFI voltage low-frequency component is:

$$RFI = (A+B+C+D) \times 3.22$$

R111 is the offset resistor for holding the RFI signal in the pre-amp's output range. The RFI signal is AC coupled and input to Pin 4 (RFIN pin).

This IC contains an RF AGC circuit, which holds the RFO output at Pin 2 at a fixed level ( $1.2 \pm 0.2V_{p-p}$ ). This RFO signal is used in the EFM, DFCT, and MIRR circuits.

## 3) EFM Circuit

This circuit, "squares" up the analog RF signal into a digital EFM signal. In order to ensure minimum errors it is necessary to use a feedback circuit to match the DC level of the threshold to the center of the RF waveform.

This circuit uses the fact that the EFM signal should have no DC component. By feeding back the EFM signal's DC level the threshold level changes until the DC level is zero and the threshold, by definition, is at the exact center of the RFO waveform. The filtering in the feedback has been adjusted to ensure minimum error. The EFM signal is output from Pin 35. The signal is a 2.5Vp-p amplitude signal centering on REFO.

## 4) DFCT (Defect) Circuit

The DFCT circuit detects defects on the disc surface, and outputs a "H" signal from Pin 33.

If there is dirt on the disc, drop outs may appear. The DFCT signal output is input to the servo LSI HOLD pin and the focus and tracking servo drives are held while the DFCT output is "H" in order to improve playability.

## 5) RFOK Circuit

This circuit produces the signal indicating the focus close state during play and the timing for closing the focus servo. This signal is output from Pin 32. This RFOK signal output is input to the servo LSI RFOK pin and the focus close command is issued by the servo LSI. This signal is high during play when the focus is closed.

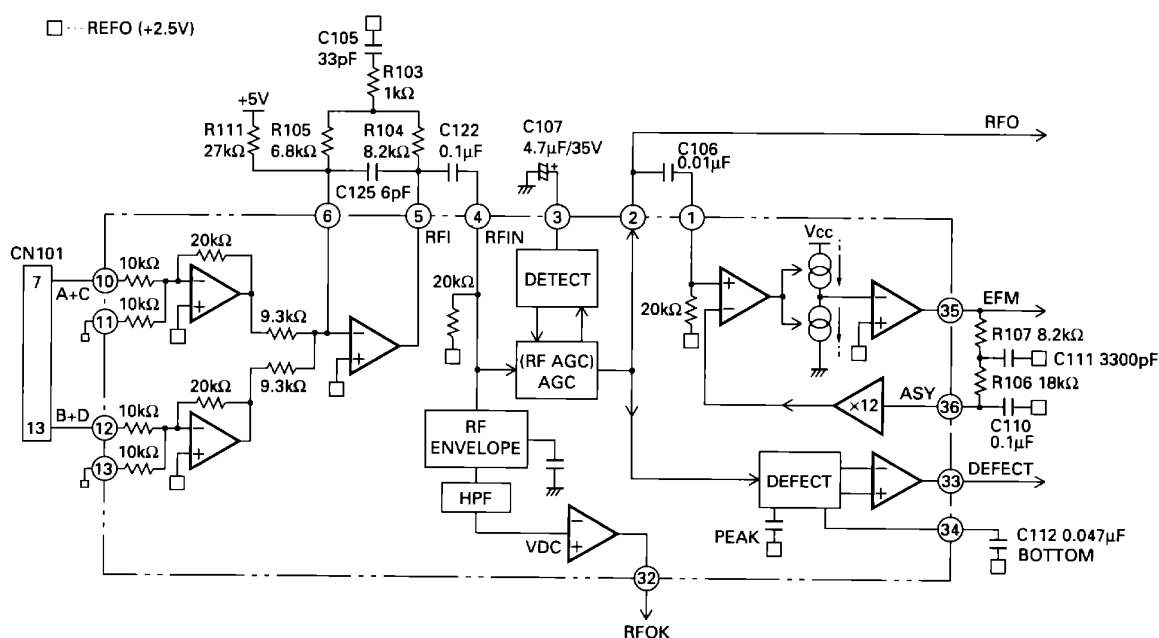


Fig.3 : RF AMP, RF AGC, EFM, DFCT, RFOK CIRCUIT



## 6) Focus Error Amp

The photo-detector outputs (A+C) and (B+D) are passed through a differential amp, and an error amp and (A+C-B-D) is output from Pin 28 as the FE signal. The FEY voltage low-frequency component is:

$$FEY = (A+C-B-D) \times \frac{20k\Omega}{10k\Omega} \times \frac{90k\Omega}{68.8k\Omega} \times \frac{R108}{17.2k\Omega}$$

: (PU FE level × 5.02)

An S curve of about 1.6Vp-p is obtained with REFO as the reference. The final-stage amp cutoff frequency is 12.4kHz.

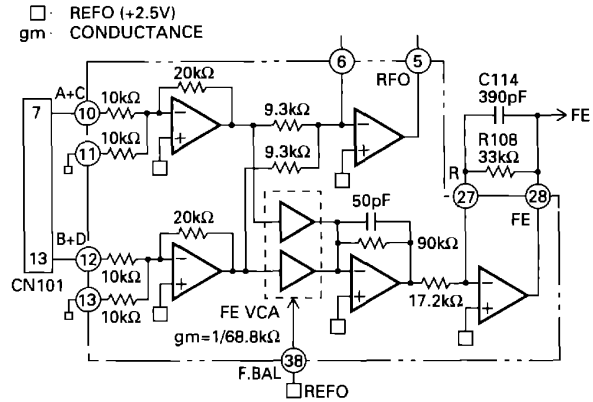


Fig.4 : FOCUS ERROR AMPLIFIER

## 7) Tracking Error Amp

The photo-detector E and F outputs are passed through a differential amp and an error amp and (E-F) is output from Pin 24 as the TE signal. The TEY voltage low-frequency component is:

$$TEY = (E-F) \times \frac{63k\Omega}{(31k\Omega+16k\Omega)} \times \frac{R109}{17k\Omega}$$

: (PU TE output level × 5.36)

The TE waveform of about 1.5Vp-p with REFO as the reference is obtained as the TE output (Pin 24). The final-stage amp cutoff frequency is 19.5kHz.

## 8) Tracking Zero Crossing Amp

The tracking zero crossing signal (below, TEC signal) is the TE waveform (Pin 24 voltage) amplified four times and is used to find the zero crossing points of the tracking error with the UPD63702GF servo LSI. This zero crossing point is found for the following two reasons.

- (1) To count tracks for carriage moves and track jumps
- (2) To detect the direction in which the lens is moving for tracking closing (This is used in the tracking brake circuit, described Page 9 b).)

The TEC signal frequency range is 500Hz - 19.5kHz.

$$TEC \text{ voltage} = TE \text{ level} \times 4$$

In other words, the TEC signal level is calculated at 6Vp-p. This level exceeds the op-amp's output range and the signal is clipped, but this can be ignored because this signal is used by the servo LSI only at the zero crossing point.

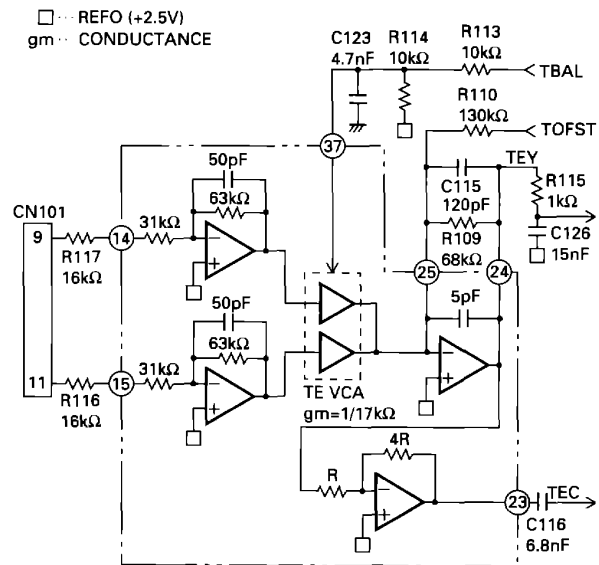


Fig.5 : TRACKING ERROR AMPLIFIER & TRACKING ZERO CROSSING AMPLIFIER



### 9) MIRR (Mirror) Circuit

The MIRR signal shows the on track and off track data and is output from Pin 31.

When the laser beam is

On track: MIRR = "L"

Off track: MIRR = "H"

This signal is used in the brake circuit, described Page 9 b).

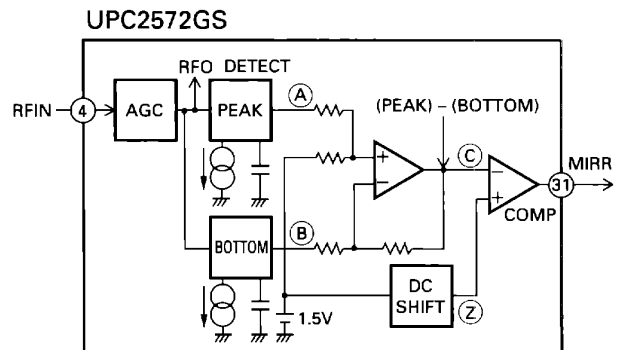


Fig.6 : MIRR CIRCUIT

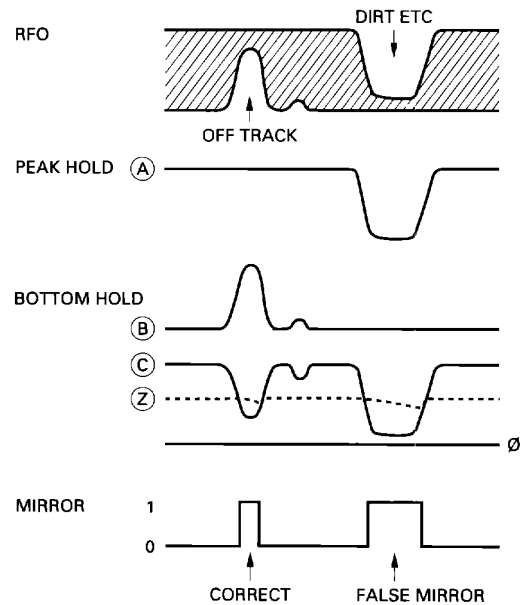


Fig.7 : MIRR CIRCUIT & SIGNAL DIAGRAM

### 10) 3TOUT Circuit

This circuit detects variations of the RF signal when an external interference is input into the focus servo loop and outputs the phase difference between the FE signal and the RF level variation signal from Pin 30. The signal has been passed through a low-pass filter ( $f_c = 40\text{Hz}$ ). This signal is used for the FE bias automatic adjustment, described Page 12 4).

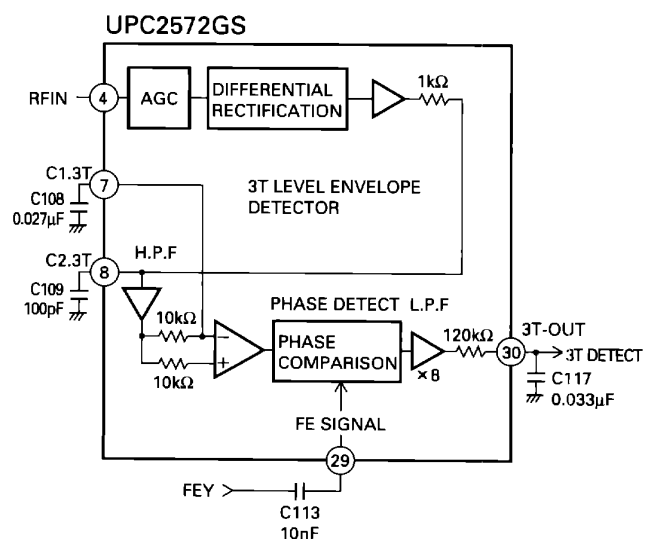


Fig.8 : 3T OUT CIRCUIT



## 1.2 SERVO SECTION (UPD63702GF: IC201)

This section can be divided into two parts.

One is the servo processing section, which handles such servo controls as error signal equalizing, in focus, track jump, and carriage move. The other is the signal processing section, which handles data decoding, error correction, and interpolation processing.

This IC converts the FE and TE signals from analog to digital and outputs the focus, tracking, and carriage drive signals via the servo block. Also, the EFM signal from the pre-amp is decoded in the signal processing section and finally output as audio signals after D/A conversion. (This IC has a built in audio digital-analog converter.) The decoding process also creates the spindle servo error signals, which is fed to the spindle servo block to create the spindle drive signal.

The focus, tracking, carriage, and spindle drive signals are then amplified by IC301, XLA6997FP and fed to their respective actuators and motors.

### 1) Focus Servo System

The main focus servo equalizer is in the UPD63702GF. Figure 9 is the focus servo block diagram.

In the focus servo system, the lens must be brought within the in-focus range for focus closing. Therefore, the lens is raised and lowered according to the triangular focus search voltage to find the focus point. During this time the spindle motor is kicked and kept rotating at a set speed.

The servo LSI monitors the FE signal and the RFOK signal and automatically carries out the focus close operation at the appropriate point.

Focus closing is carried out when the following four conditions are all met.

- (1) The lens is moving from far to near toward the disc surface.
- (2) RFOK = H
- (3) The FZD signal (within the IC) is latched at high.
- (4) FE = 0 (REFO reference)

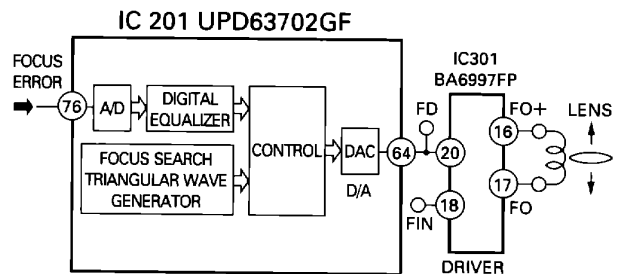


Fig.9 : FOCUS SERVO BLOCK DIAGRAM



When the above conditions are all met and the focus is closed, the XSO signal is shifted from high to low, then 40ms later, the microcomputer begins to monitor the RFOK signal that is passed through the low pass filter.

When the RFOK signal is judged to be low, the microcomputer carries out various actions such as protection.

Figure 10 shows the series of operations for focus closing (for the case where focus cannot be closed.) Also, in focus-mode-selection during test mode when the display is 01, if the focus close button is pressed, the S curve, search voltage, and actual lens movements can be checked.

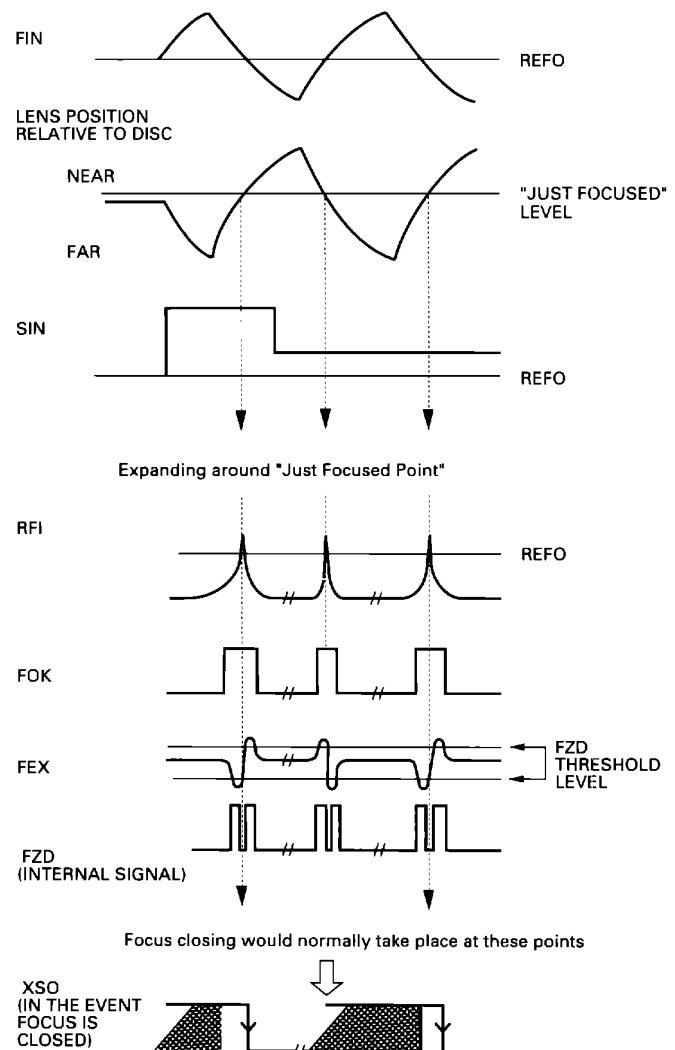


Fig.10 : FOCUS CLOSING SEQUENCE



## 2) Tracking Servo System

The main tracking servo equalizer is in the UPD63702GF. Figure 11 is the tracking servo block diagram.

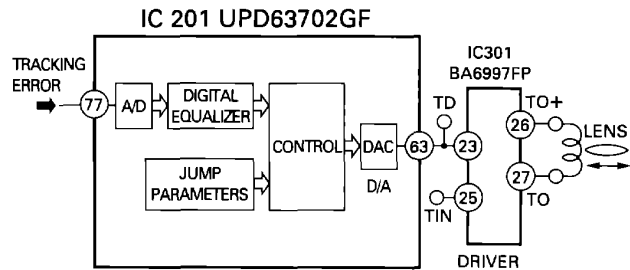


Fig.11 : TRACKING SERVO BLOCK DIAGRAM

### a) Track Jump

When the LSI receives the track jump command from the microcomputer, the track jump is carried out automatically by the auto sequence function within the LSI. This system has six types of track jumps used for searches: 1, 4, 10, 32,  $32 \times 2$ , and  $32 \times 3$ . In test mode, in addition to these jumps, CRG moves can be executed and checked by mode selection. For track jumps, the microcomputer sets half of the total number of jumps (2 tracks for a 4 track jump) and counts the set number of tracks using the TEC signals. From the point when it has counted the set number of tracks, it outputs the brake pulse for a fixed period of time (set by the microcomputer) to stop the lens. In this way, it can close the tracking and continue normal play.

To improve the servo loop re-closing performance just after track jump, the brake circuit comes on for 60ms after the end of the brake pulse and the tracking servo gain is increased.

Fast forward and reverse operations in normal mode are realized by executing consecutive single track jumps. The speed is about 10 times as high as in normal play.

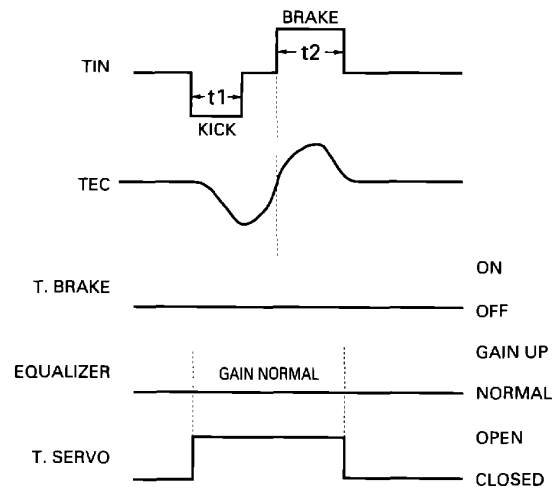


Fig.12 : SINGLE TRACK JUMP

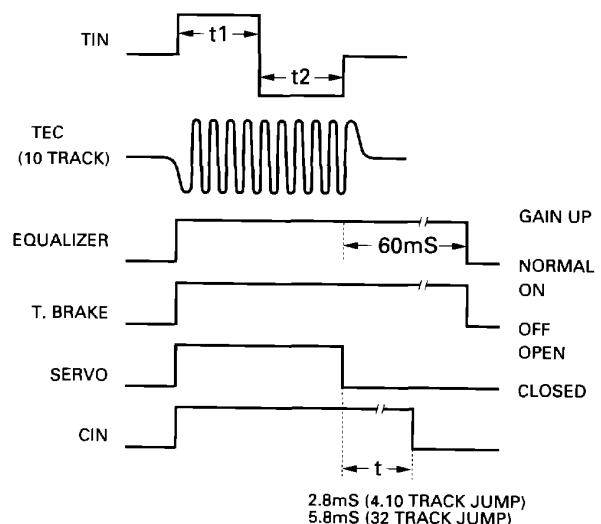
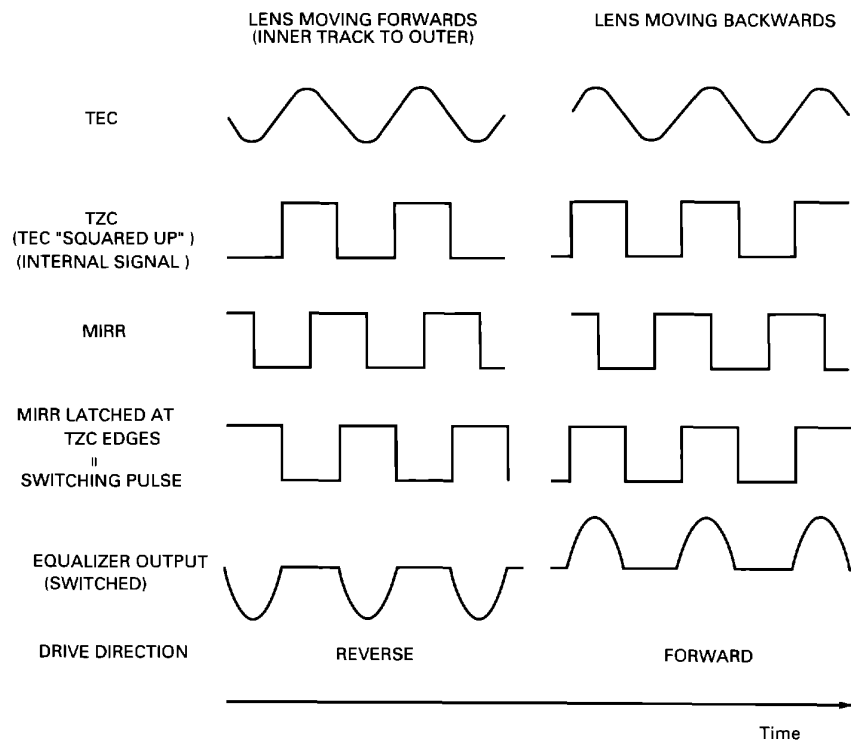


Fig.13 : MULTI-TRACK JUMP



### b) Brake Circuit

This relies on determining which direction the lens is moving and only outputting the portion of the drive waveform which acts to oppose this motion. Direction of motion is deduced from TEC and the MIRR signal and knowledge of their phase relation.



Note: Equalizer output assumed to have same phase as TEC.

Fig.14 : TRACKING BRAKE CIRCUIT



### 3) Carriage Servo System

The carriage servo supplies the tracking equalizer's low-frequency component (lens position information) output to the carriage equalizer and after applying a fixed amount of gain, outputs the drive signal from the servo LSI. This signal is applied to the carriage motor through the driver IC.

When the lens offset reaches a certain level during play, the entire PU must be moved in the forward direction. Therefore, the equalizer gain is adjusted to output a voltage higher than the carriage motor starting voltage. In actual operations, a certain threshold level is set for the equalizer output within the servo LSI and the drive voltage is output from the servo LSI only when the equalizer output level exceeds that threshold level. This reduces power consumption. Also, due to disc eccentricity and other factors, the equalizer output voltage may cross the threshold level a number of times before the entire PU starts to move. In this case, the drive voltage waveform, (which is applied) from the LSI, becomes pulsative.

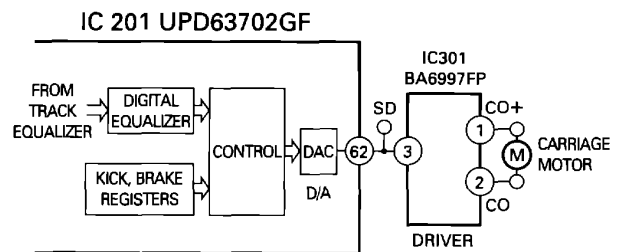


Fig.15 : CARRIAGE SERVO CIRCUIT

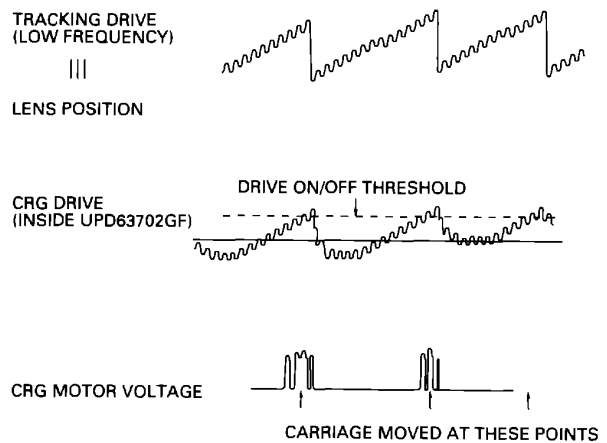


Fig.16 : CARRIAGE WAVEFORM



#### 4) Spindle Servo System

The spindle servo has the following modes.

- (1) Kick: The mode used for disc rotation acceleration during setup
- (2) Offset:
  - a) Used during setup from the end of kick until the AGC end
  - b) Used during play when the focus is unlocked until it is recovered

Both of these are for holding the disc rotation rate near the normal rotation rate.

- (3) Adaptive servo: CLV servo mode for normal operation

In the EFM demodulation block, the frame sync signal and internal frame counter output signal are sampled each  $WFCK/16$  and a signal is produced indicating whether or not they match. Only after this signal is in non-match mode eight consecutive times, is the system treated as out of sync, at other times it is treated as in sync. In this adaptive servo mode, a servo mode for pulling the system into sync is automatically selected when the system is out of sync and the regular servo is automatically selected when the system is in sync.

- (4) Brake: The mode for stopping the spindle motor rotation

The brake voltage is output by the microcomputer from the servo LSI. At this time, the EFM wave form is monitored within the LSI and if the longest EFM pattern exceeds a certain interval (when the rotation is slow enough), a flag is registered within the LSI and the microcomputer switches the brake voltage off. If the flag is not registered within a certain period of time, the microcomputer switches from brake mode to stop mode which lasts for a fixed period of time. In this case, ejection of the disc can only occur after this period of time.

- (5) Stop: The mode used during power on and ejection

At this time, the voltage across the spindle motor is 0V.

- (6) Rough servo: The mode used for carriage feed (carriage move during a long search)

The linear speed is calculated from the EFM wave form and a high level or low level is input to the spindle equalizer. In test mode, this mode is also used for the grating check.

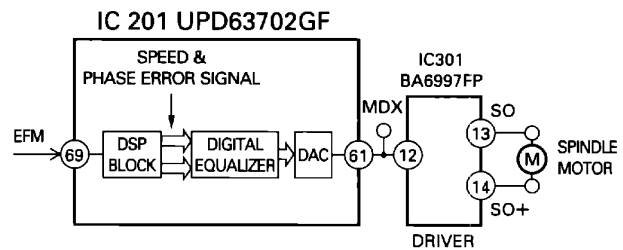


Fig.17 : SPINDLE SERVO BLOCK DIAGRAM



### 1.3 AUTOMATIC ADJUSTMENT FUNCTIONS

This system uses a pre-amp (UPD2572GS) and servo LSI (UPD63702GF) to automate all circuit adjustment. All adjustments are carried out automatically each time a disc is inserted or the CD mode is selected with the source key. Here is how each automatic adjustment works.

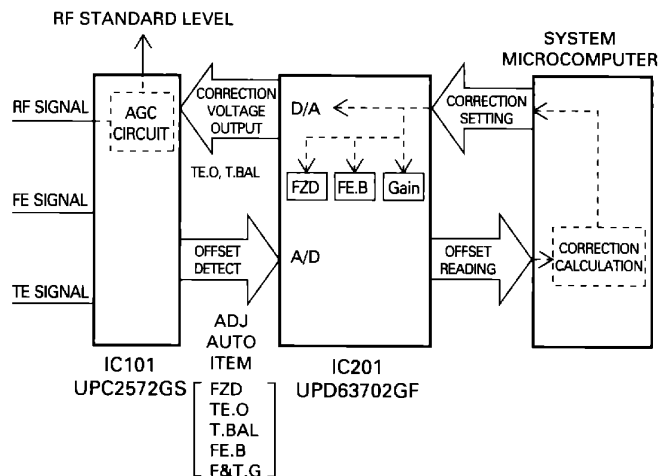


Fig.18 : AUTOMATIC GAIN CONTROL

#### 1) FZD Cancel Setting

This setting is to make the focus closing reliable. When the power is switched on, the FE offset level is read and a voltage opposite to this offset value is written to the CRAM in the IC to cancel the offset. In this way, the FZD threshold level can be set to a constant value (+150mV) and one of the conditions within the IC for focus closing "that the FZD signal is latched at high" can be fulfilled reliably.

#### 2) TE Offset Automatic Adjustment

This function adjusts the pre-amp TE amp offset to 0 V when the power is switched on.

The adjustment procedure is:

- (1) The TE offset (LD off) is read by the microcomputer via the servo LSI (offset = TE1).
- (2) The microcomputer calculates the voltage to be corrected from the value of TE1 and sets the output of Pin 65 of the servo LSI (signal name: TOFST). The concrete calculation method is as follows.

$$\text{TOFST2} = \text{TOFST1} + \text{TE1} \times \text{R110/R109}$$

#### 3) Tracking Balance Automatic Adjustment

This adjustment equalizes the difference in sensitivity of the E channel and F channel of the TE output. In actual practice, the TE waveform is adjusted to be vertically symmetrical about REFO.

The adjustment procedure is:

- (1) After focus closing, the lens is kicked in the radial direction to reliably generate the TE waveform.
- (2) At this time, the microcomputer reads the peak and bottom of the TE waveform through the servo LSI.

- (3) The microcomputer calculates the value of the offset and the correction voltage to output from Pin 66 of the servo LSI (signal name: TBAL).
- (4) The voltage output from the servo LSI is input to Pin 37 of the pre-amp (IC101: UPC2572). This pin is the TEVCA amp control voltage pin. The gain for the E channel and F channel within the pre-amp is varied according to the input voltage to adjust the tracking balance and make the TE waveform vertically symmetrical about REFO.

#### 4) FE Bias Automatic Adjustment

This adjustment is made to maximize the RFI level during play by optimizing the focus point. This adjustment utilizes the phase difference between the RF waveform 3T level signal and the focus error signal. Since an external interference is input into the focus loop, this adjustment uses the same timing as the auto gain control, explained below.

The adjustment procedure is:

- (1) External interference is injected into the focus loop by command from the microcomputer (within the servo LSI).
- (2) The RF signal 3T component level variation is detected within the pre-amp.
- (3) The phase difference between the FE signal due to external interference input and the above 3T component is detected, to sense the focus deviation direction, and the result is output as a DC voltage from Pin 30 (3T-OUT) of the pre-amp.



- (4) The 3T-OUT voltage is input to Pin 75 (A/D port) of the servo LSI and the microcomputer reads the 3T-OUT voltage through the servo LSI.
- (5) The microcomputer calculates the required correction and adjusts the focus loop offset in the servo LSI.

In the same manner as the auto gain control, this adjustment is repeated a number of times to raise the adjustment precision.

### 5) Auto Gain Control (AGC)

This adjustment has already been used in the previous generation of CD modules. This function automatically adjusts the focus and tracking servo loop gain.

The adjustment procedure is:

- (1) External interference is injected into the servo loop.
- (2) The error signals (FE, TE) when the external interference is injected are passed through a band pass filter and the G1 and G2 signals are obtained.
- (3) The microcomputer reads the G1 and G2 signals through the servo LSI.
- (4) The microcomputer calculates the required correction and adjusts the loop gain within the servo LSI.

To raise the adjustment precision, the same adjustment procedure is repeated a number of times.

### 6) Initial Adjustment Values

All the automatic adjustments use the previous adjustment value as the initial value as long as the microcomputer power supply is not cut off (the backup is not cut off). If the backup is cut off, automatic adjustment does not start from the previous adjustment value, but rather from the default setting.

### 7) The Coefficient Display for Adjustment Result

The results of all automatic adjustments can be displayed and checked in test mode.

The coefficient displays for each automatic adjustment are as follows.

- (1) FZD cancel, TE.OFST cancel, T.BAL, FE.bias

Reference value = 32 (A coefficient of 32 indicates that no adjustment was necessary).

The display is in units of about 40mV.

Example: FZD cancel coefficient = 35

$$35 - 32 = 3 \quad 3 \times 40\text{mV} = 120\text{mV}$$

Since the corrected value is approximately + 120mV, the FE offset before adjustment was - 120mV.

- (2) Focus and tracking gain adjustment

Reference value: Focus = 13, tracking = 20

The coefficient display shows the gain decrease relative to the reference value.

Example: AGC coefficient = 40

$$\text{Gain} = 20\log (20/40) = - 6\text{dB}$$

## 1.4 POWER SUPPLY AND LOADING SECTION

The power supply within the system makes the loading motor drive power supply VM (7.6V) and 5V Reg IC power (6.9V) from VD (8.3V) supplied by the mother board. The disc detection LED drive voltage and the CD driver IC power supply use VD directly.

The microcomputer switches the CD driver and laser diode on/off with "CONT" and switches the 5V power on/off with "CD5VON". There is no particular control pin for the loading motor driver, but the "EJ" and "LOAD" input signals serve the same role.

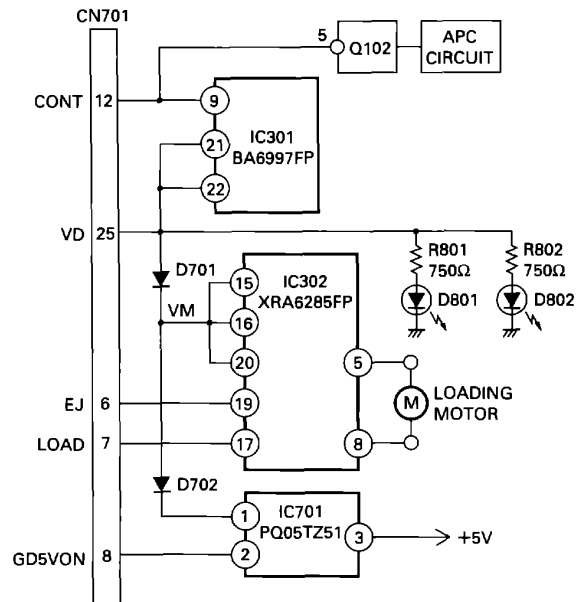


Fig.19 : POWER SUPPLY & LOADING SECTION



## 2. THE SUMMARY OF STRUCTURE

### ● Disc Loading Operations

1. There are two photo transistors before and after the rubber roller that conveys the disc. They receive light from the corresponding two LEDs. (When light is received, the photo transistor voltage is low.)
2. When a disc is inserted to just before the rubber roller, the front section photo transistor (P1) voltage goes high and the loading motor drive starts.
3. The drive power of the motor is transmitted by gear and the rubber roller rotates to transport the disc.

The rubber roller is at one end of the loading arm and lifts up the guide arm. The guide arm is positioned by two springs. Therefore the guide arm and the rubber roller provide the appropriate pressure to feed out the disc between them.

4. The clamber arm also has a disc centering mechanism that discriminates the size of the disc and clamps the disc at the center of the spindle motor. The centering arms form a set left and right on the clamber arm and can move centering on their pivots. At the end of the centering arms are the lock arms. (The lock arms rotate about the centering pins and are locked to the clamber arm for 8cm discs.)

For 12cm discs, the lock arms are unlocked and move to the position indicated in Figure 21.

The detection arm, which has its center of rotation on the centering arm on the right side of the diagram, has different positions for 8cm and 12cm discs. When one of these discs is positioned on the spindle, the detection arm moves clockwise according to the external diameter of the disc and moves the detection lever to the bottom side of the figure.

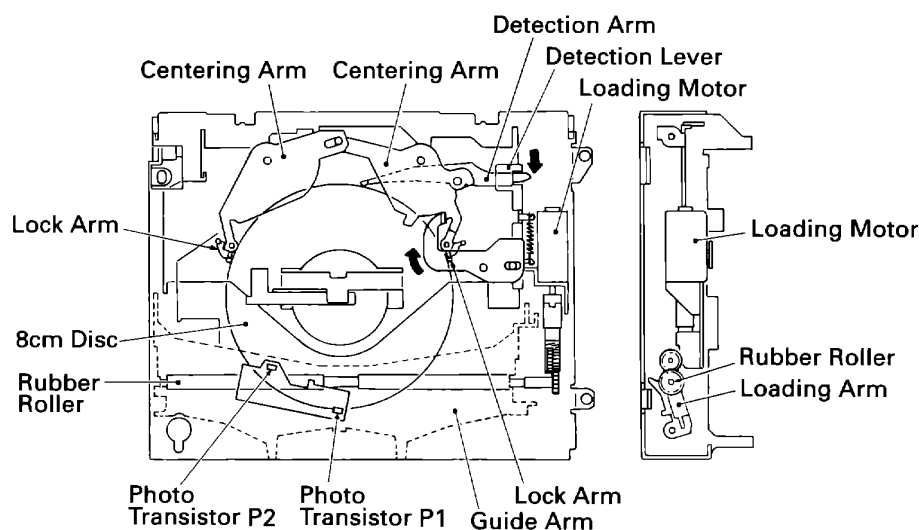


Fig.20

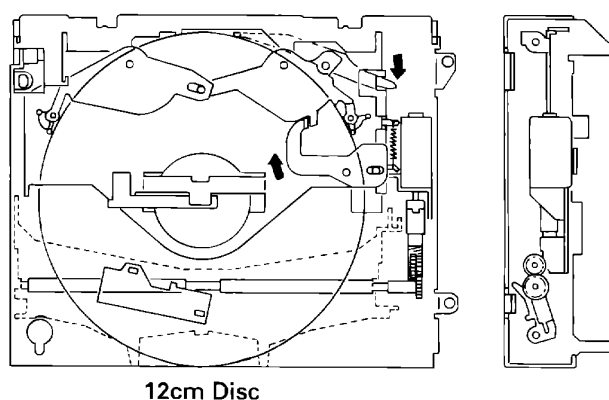


Fig.21

## ● Clamp Operation

The rack gear touching the detection lever meshes with the gear driven by the loading motor and rotates the L arm in the direction of the arrow in Figure 23. The clamber arm, lifted up by the L arm, descends and clamps the disc. Also, the lock lever linked with the L arm moves the loading arm. Because of this, the rubber roller descends, separating from the disc. At the same time the guide arm also descends. Loading ends at the position where the lock lever switches on the clamp switch.

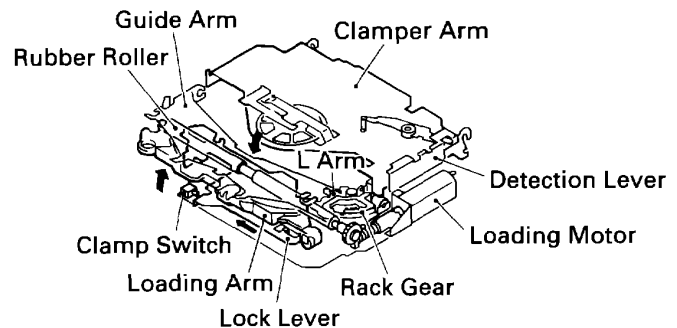


Fig.22

## ● Mechanism Lock Operation

1. In the eject state, both ends of the loading arm touch the bottom of the frame, the floating section front side is pushed down against the resistance of the mechanism suspension spring, and the disc insertion height position is found. For play, the loading arm rotates and the separation of the two ends from the frame bottom releases the floating section.

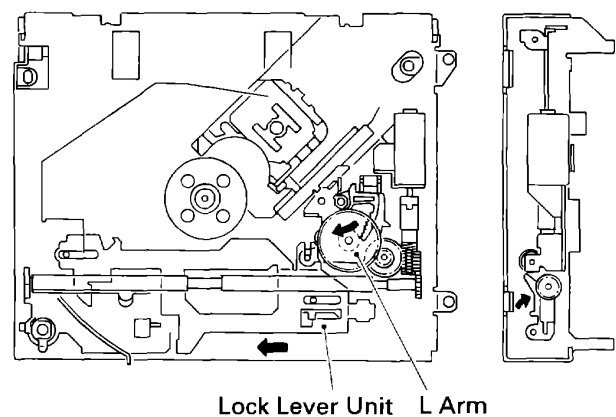


Fig.23

## ● Eject

1. The eject mechanism operates by reversing the rotation which takes place when the loading motor loads. The L arm moves and operates the mechanical lock, the clamp is released, the roller is applied, and the disc is conveyed. Loading stops when the photo transistor to the rear of the rubber roller (P1) is illuminated. However, in case of an 8cm disc, motor revolution stops a fixed period of time after P2 is illuminated. The disc type is recognized during play, by the voltage of the photo transistor (P1) located in front of the rubber rollers.



### 3. DISASSEMBLY AND ASSEMBLY

#### 1. Remove the CD Mechanism Module

Remove in the order of the circled numbers in the disassembly diagram.

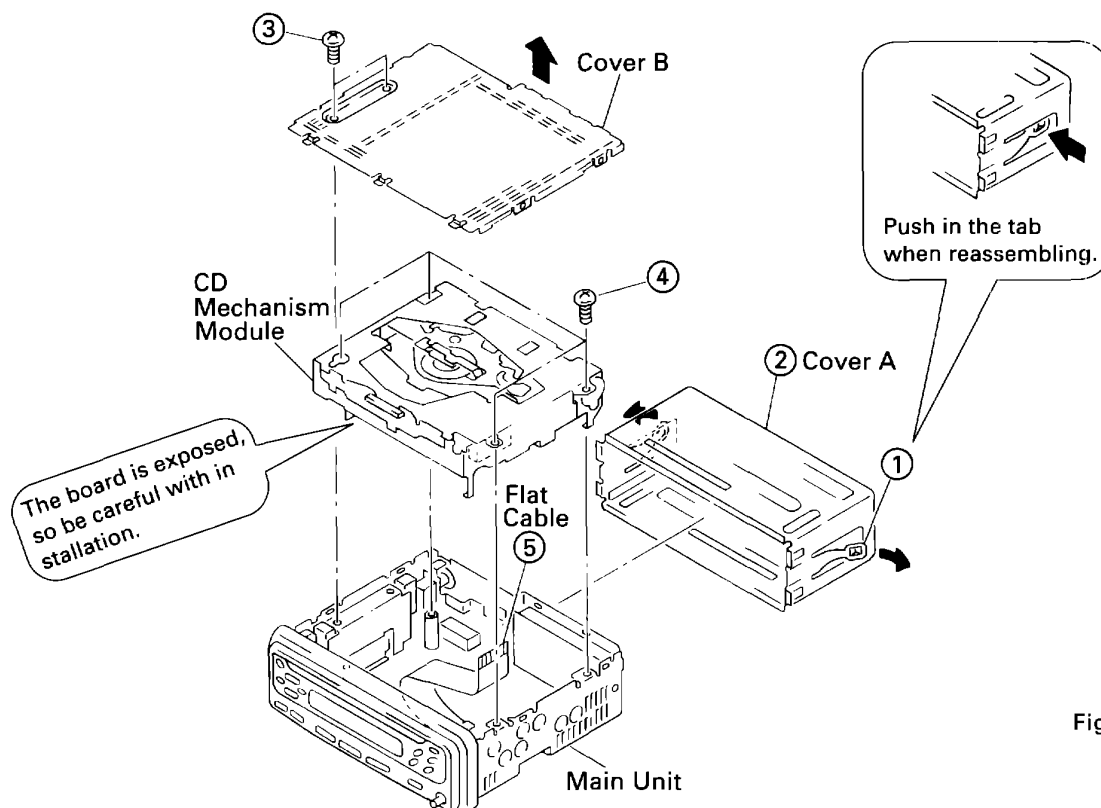


Fig.24

#### 2. Remove the Damper and the Frame Unit

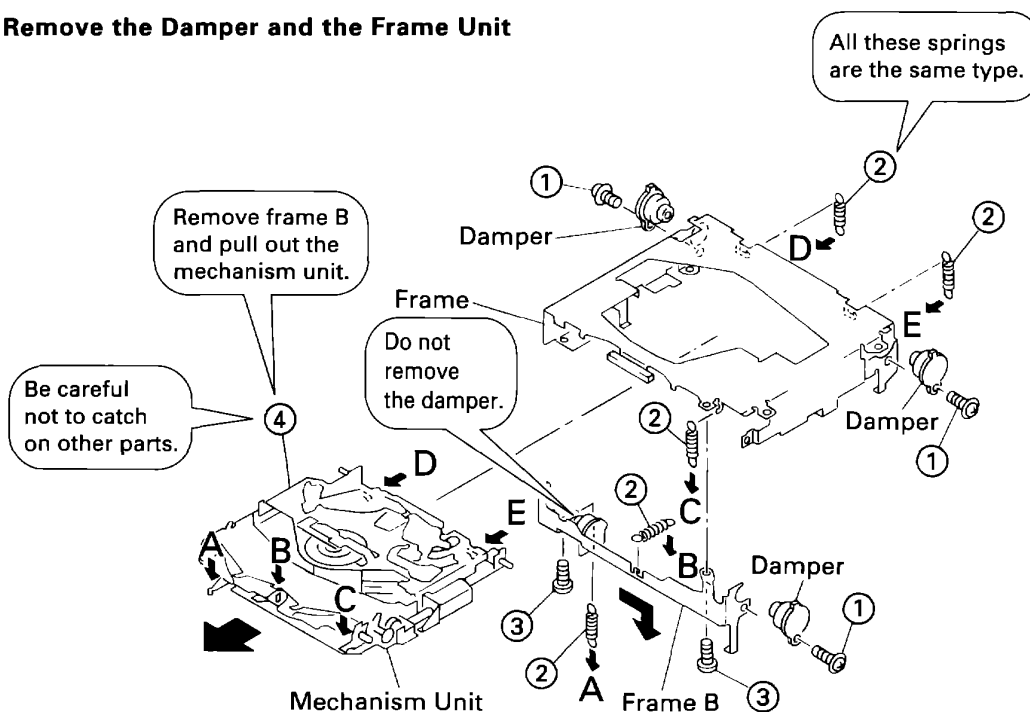


Fig.25

### 3. Remove the Spindle Motor

Be careful.  
This work requires  
considerable force  
and involves the danger  
of injury.

Turn the support wheel  
so that the screw head  
become visible through  
the hole.

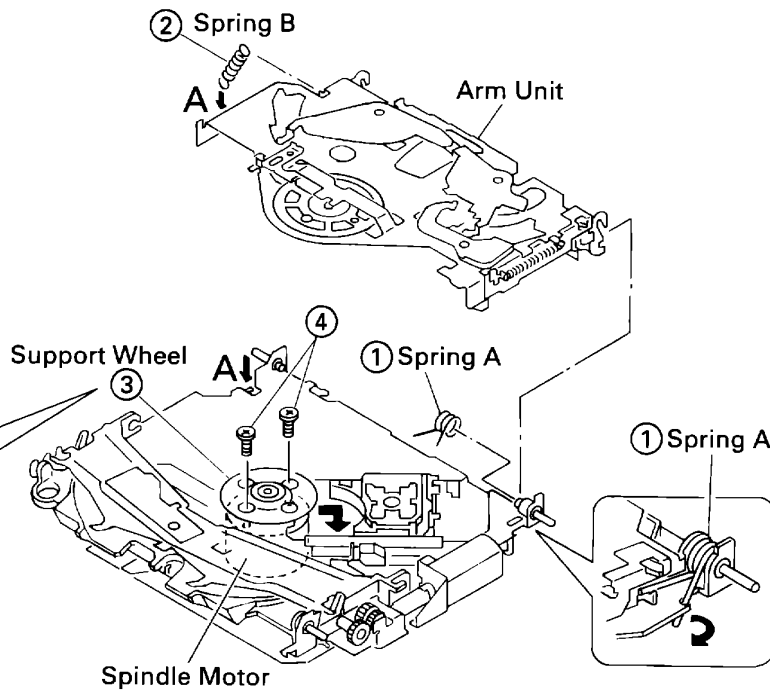


Fig.26

### 4. Remove the Loading Motor

Each spring  
is different  
type.

After raising  
the guide arm  
90°, remove it.

Stand the back  
side of the arm,  
lift up the left  
then remove.

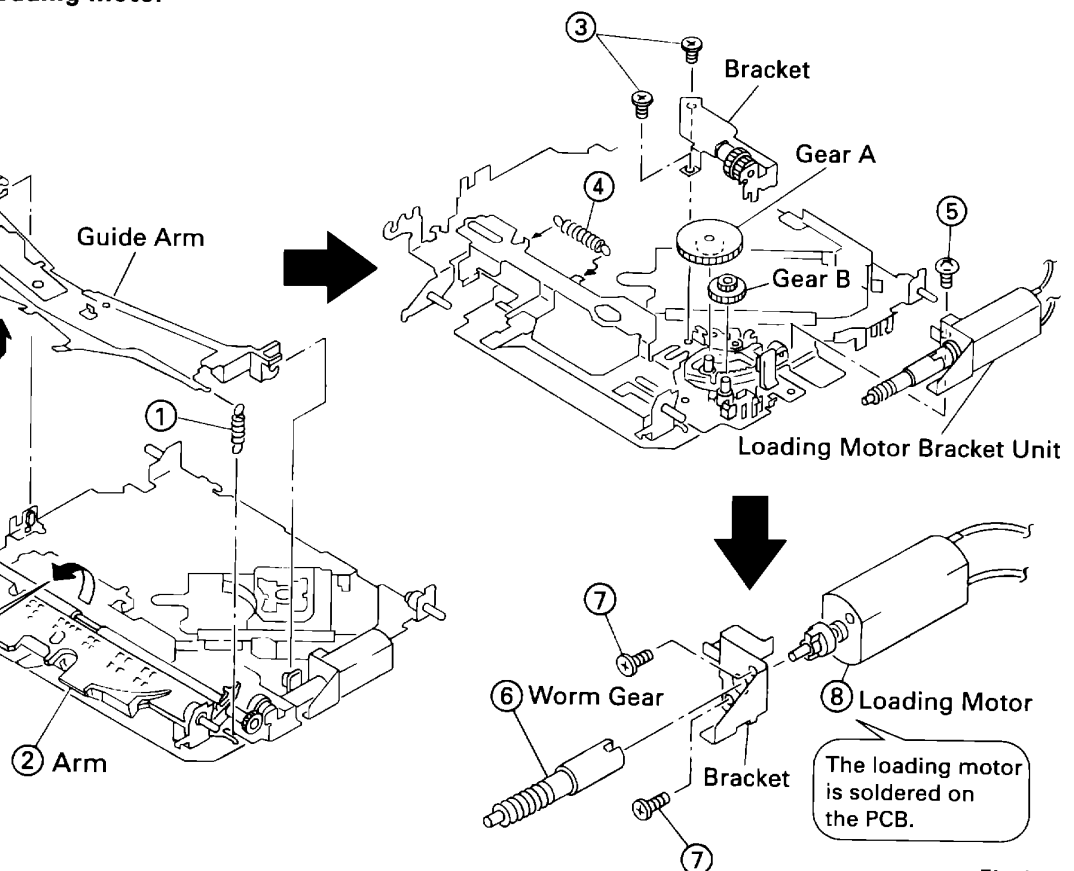


Fig.27



# 5. Remove the PU Unit and the Carriage Motor

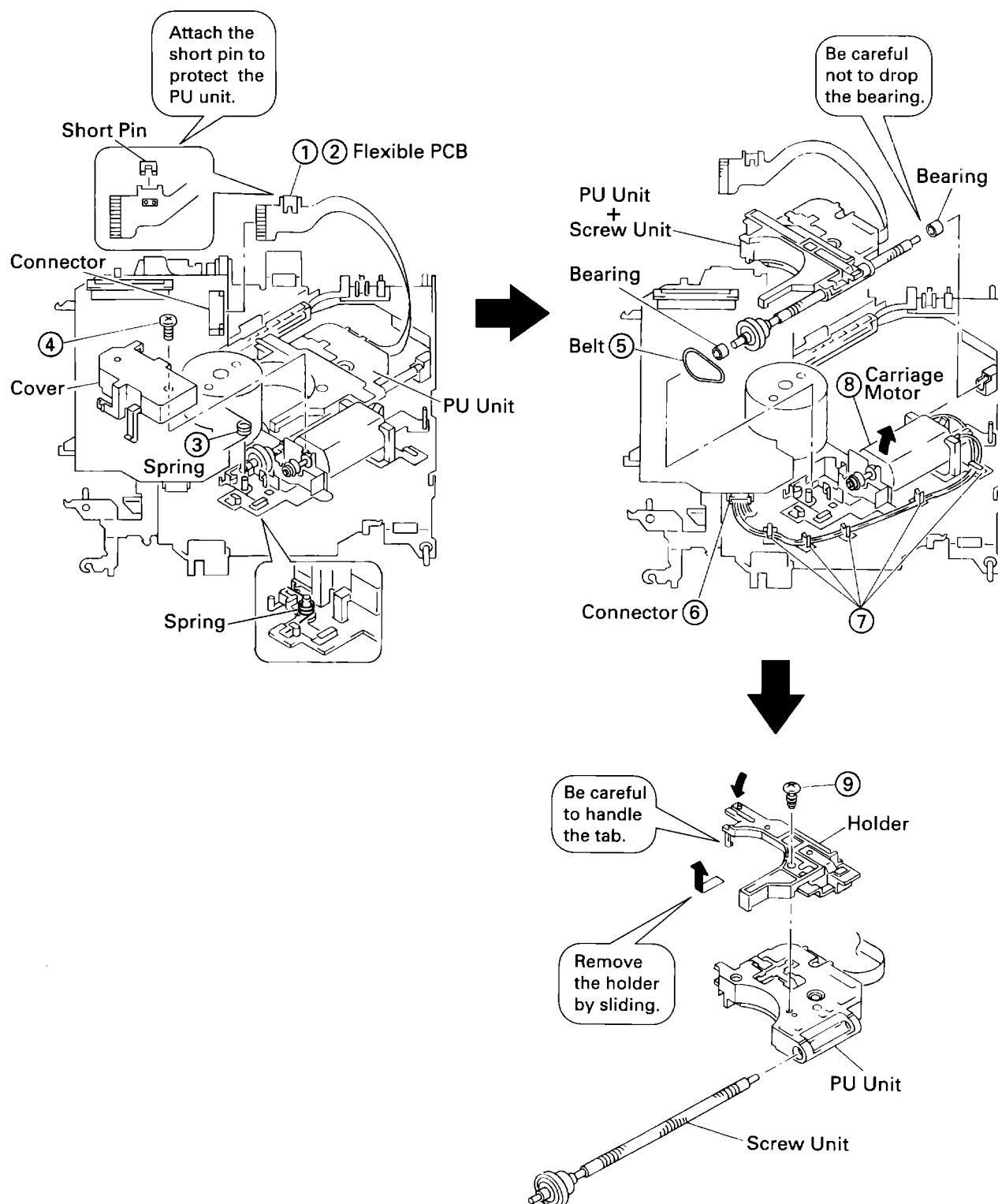


Fig.28

